The Iron A

A Review of the Hardware, Iron and Metal Trades.

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shaped tube, such as is usually used for fil-

The Tegnander Rotary Engine.

In the accompanying drawings we present a rotary engine of recent design, which, though not absolutely new, contains many features which are improvements upon older ones of a similar type, and has been attract-ing much attention and winning considerable ing much attention and winning considerable favor in Sweden, where it originated. It is the invention of Mr. Tegnander, of Gothenburg, whose representative in this country is Dr. H. A. W. Lindehn, of Philadelphia. By reference to our cuts, which are taken from the Teknisk Tidskrift, of Stockholm, it will be seen that it is a double-acting engine, the cylinder casing 8 Fig. 2, having four the cylinder casing 8, Fig. 2, having four chambers and pistons. When the steam enters the cylinders it acts on the bottom and ters the cylinders it acts on the bottom and top of each alternate piston. Each pair of diametrically opposite cylinders are connected by the dotted steam ports shown in Fig. 1. As will be explained further on, the whole cylinder casing revolves, while the steam chest is stationary. When the port a passes the port d in the steam chest, steam exters the cylinders of and II. Fig. 1. port a passes the port d in the steam chest, steam enters the cylinders 9 and 11, Fig. 1, acting on the bottom of the piston of 9 and on the top of that in 11, thus giving the disk, to which the piston rods are connected by ball joints, a rotary motion which is imparted to the engine shaft. A carrier ring. 23 in Figs. 1 and 2, is attached to the disk at two points, and by means of two studs, 25 in Fig. 2, which are fixed at a distance of 90 degrees from the other pivots, this carrier is firmly connected with the cylinder casing 8. A universal joint between the disk and the cylinder casing is thus furnished, which while it forces both to revolve together, permits the other movements to go on undisturbed. The steam chest has six steam ports, three for admission and three for exhaust. By turning a handle the steam ports, three for admission and three for exhaust. By turning a handle the steam supply can be cut off from all but one of the steam ports, and two-thirds expansion can be thus secured. For reversing the handle 38 is moved, so that the valve shown in Fig. 1 makes the ports for admission do service as exhaust ports and vice versa, and by the same means the speed may be slackened or increased at will. During one revolution each piston describes an elliptical curve, the larger axis of which is equal to the distance from center to center of two diametrically opposite ball joints.

An engine of this design has been exhibited before the Franklin Institute, and was shown, during the recent meeting of the

shown, during the recent meeting of the American Institute of Mining Engineers, running a brush dynamo-electric machine. From a report by engineer Lilliehöök, of the Swedish Navy, to the Royal Navy Department, we take the following data, obtained during an official test: The engine experiment of with was a feet long as inches wide during an official test: The engine experimented with was 3 feet long, 22 inches wide and 16 inches high, and weighed 185 pounds, and although it was not bolted down, it ran at a speed of 500 to 600 revolutions without moving, a proof that it was well balanced. A series of brake trials were made under varying steam pressure and different grades of expansion. With one-third expansion, 57 pounds boiler pressure, and a speed of 587 revolutions a minute, 8.19 horse power was developed. By increasing the pressure to 125 pounds, 17.8 horse power was reached. Mr. Lilliehöök speaks highly of the ease with which the engine could be handled, and expresses the opinion that with a condenser it might be as economical in fuel as a compound engine.

nound engine. SCIENTIFIC AND TECHNICAL.

A French manufacturing firm, Serpollet, have patented

A PECULIAR METHOD OF GENERATING STEAM At each stroke of the piston of the engine a certain quantity of water is projected against two strongly-heated metal plates. The steam so produced goes direct into the cylinder, so that in this arrangement not only a special generator, but also the valvesystem for the entering steam, is superfluous. The mode of action is similar to Hock's petroleum motor. In the example given in Dingler's Journal, the vaporiring surface consists of two metallic cones, one within the other, with an interval of about o.04 inch between. The hollow space is divided into two chambers, each of which is connected with one side of the cylinder. The gases play first on the inner surface of the

cone, then on the outer. Mr. Alexander Adams, of the English Post Office Telegraph Department, reports that he has observed the existence of

ELECTRIC TIDES IN TELEGRAPH CIRCUITS. By long continued observations he has de-termined distinct variations of strength in those earth currents which are invariably those earth currents which are invariantly present on all telegraphic wires, following the different diurnal positions of the moon with respect to the earth. He read a paper on the subject at a recent meeting of the

Society of Telegraph Engineers.

M. Mallet has recently published additional data on the working of

COMPOUND LOCOMOTIVES.

interest.
Sig. Rosio, of the Royal Italian Marine
Academy, has devised an apparatus for

MEASURING THE TORSION OF THE AXLES OF MACHINES IN MOTION BY THE USE OF THE

TELEPHONE, The apparatus is described as follows: Two precisely similar brass wheels, of somewhat larger diameter than the shaft, are attached to the latter, at the greatest distance apart to the latter, at the greatest distance apart which circumstances will allow. Each of these wheels is provided with the same number of exactly similar and equally spaced vanes of soft iron. The wheels must be so placed that a plane passing through the axis run into cakes weighing about 2 pounds of the shaft and the center of a vane on one of the wheels, must also intersect the center carbon is first melted and then drawn off;

depend upon the number of vanes, the speed of revolution of the shaft, and the angle between the corresponding vanes, i.e., the amount of the torsion. If, however, the coil nearest to the driving machine be pounds per train mile. In view of the growing use of high pressure compound stationary engines, these results are of much interest.

Sig. Rosio, of the Royal Italian Marine Academy, has devised an apparatus for quite silent, or else give out a note of mini-mum intensity.

In view of the known existence of large

deposits of ozocerite in Southern Utah, the following data on

THE MANUFACTURE OF PARAFFINE FROM OZOCERITE,

BY S. A. FORD.

A short, quick and accurate method for the estimation of manganese in irons, steels and spiegels has been very much needed for some time past, but now more than ever, as we find that manganese plays such an important part in the manufacture of steel by the Bessemer process, and it has become as necessary to know the amount of manganese in our mixtures of iron as of silicon. The method which has been in use in the labora-tory of the Edgar Thomson Steel Works for the last six months (for some of the main

snaped tube, such as is usually used for fil-tering the carbon from a solution of iron in the double chloride of ammonium and cop-per. This tube is inserted into a doubly perforated cork, which fits a wide-mouthed flask, and, by means of the other perfora-tions, is made the attachment to the pump. Having fitted the cork thus arranged into the cask, put into the tube a piece of asbestos. Through this filter the nitric acid solution of steel, spiegel or iron. The manganese will all remain upon the filter. I have never found a trace of manganese in the filtrate. Rinse then the dish or beaker in which the iron was dissolved with strong nitric acid, pour it upon the filter and wash the filter with strong nitric acid until the washings come through colorless. The funnel-shaped tube is removed from the flask; the filter, with its contents, pushed back into the dish or beaker in which the solution was made; hydrochloric acid added and boiled until the cxide of manganese is decomposed and chloride is formed. The asbestos is then filtered off. In doing this it is best to resort to the pump and the same tube, filtering into another flask; wash with hot water; nearly neutralize with ammonia; hot water; nearly neutralize with ammonia; add a very small quantity of acetate of soda and boil; filter; wash slightly with hot water; redissolve the small quantity of oxide of iron in hydrochloric acid (as I always find it contains a small amount of manganese, no matter how thoroughly washed), and again nearly neutralize with ammonia and add a small crystal of the acetate of soda, boil and filter. Add this filtrate to the first filtrate, heat to nearly boiling, and add an excess of microcosmic salt. Then make slightly ammoniacal and boil, stirring until the precipitate assumes the well-known until the precipitate assumes the well-known silky appearance of the phosphate of ammonia and manganese. Allow to settle and filter; wash with hot water, dry, ignite and weigh as ayrophosphate of manganese. This process works exceedingly well on blast furnace slags, which should be dissolved in hydrochloric acid and evaporated to dryness. The nitric acid is then added and the process continued the same as for steel or iron. To free it from the lime, however, a more thorough washing with the strong nitric

acid is required. The great advantage of this method is in its brevity and simplicity, a person with some little practice being able to complete three or four determinations in two hours. At the same time it gives results which vary but slightly the one from the other, the dif-ference never being greater than one or two hundredths of one per cent, and also according very closely with results obtained by the long, tedious acetic process. In the iron solution filtered from the oxide of manganese I never found a trace of manganese, and in the solution filtered from the phos-phate, neither bromine nor sulphide of amphate, neither bromine nor sulphide of ammonium gives the slightest precipitate of manganese. Evaporation to dryness in the case of steels or spiegel is not absolutely necessary, but they may be at once dissolved in the strong nitric acid, then adding the chlorate of potash, &c. I never found a trace of silica in my phosphate of manganese obtained from a steel or spiegel treated in this way.

A singular calculation has been made by

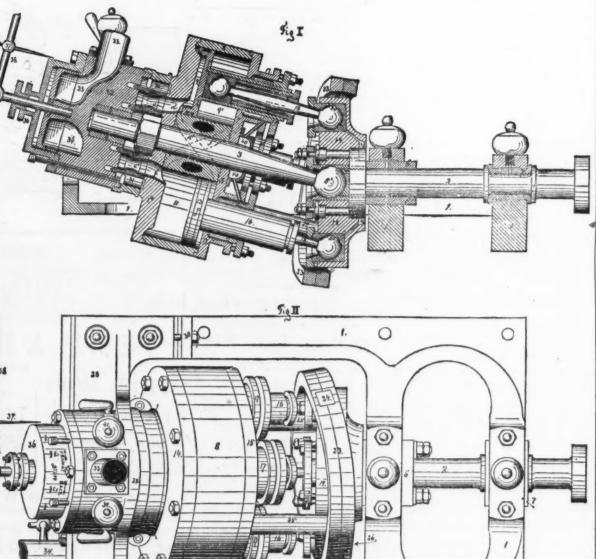
A singular calculation has been made by some foreign arithmeticians of the extent to which steam power has developed. England, it is said, derives from the employment of her wealth of coal 7,000,000 of horsepower per annum; the United States, 7,500,000; Germany, 4,000,000; France, 3,000,000; Austria, 1,500,000. This is 3,000,000; Austria, 1,500,000. exclusive of locomotive power; and as, in the Old and New World, the total number of locomotives exceeds 105,000, which are working on some 220,000 miles of railway, the horse-power is reckoned at 30,000,000. In France the horse-power of the locomotives 2,358,993, in addition to 8177 belonging to fixed engines. Steamers, not reck-oning the ships of war, employ 173,039 horse-power; industries generally, 484,241. The total horse-power of all the machines and engines worked by steam in the world is estimated at 80,000,000. Now, each horse is equal to at least 10 men, so that the hour and a half to two hours. We do not have a large precipitate to wash, as with Mr. Pattison's process; neither do we have by two German savants at 1,455,923,000, and the number of males between 15 and 65 years at about one-third of the p

> A monster petition has been presented to the Dominion Legislature asking for the the Dominion Legislature asking for the removal of coal duties, which place the cities and towns of Ontario at a disadvantage with the industries of Great Britain and the United States. The prayer, however, is not likely to be heeded.

been nearly trebled. And all this has been accomplished before the steam-engine, as a

perfected practical agent, is half a century

The Washington Territory and British Columbia coal mines are producing more largely, and are believed to be fully adeto the supply of the entire Pacific



THE TEGNANDER ROTARY ENGINE.

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The axes of the coils lie in a diametral plane of the shaft, and are consequently situated in a plane which cuts the wheels symmetrically. Each coil opposes the same pole to the vanes of the wheels. The wires of the coils belong to the same circuit in which the telephone is placed, but are wound in opposite directions on the two cores. Suppose, now, that the shaft is in motion, but undergoes no torsional strain, then any vane of one of the wheels will pass before a coil at the same instant as a corresponding vane of the other wheel, and consequently the induction currents in the coils will be of equal intensity but opposite in direction, and will neutralize each other. The telephone must consequently remain silent, provided the two coils are really identical. When the same are really identical. equal intensity but opposite in direction, and will neutralize each other. The telephone must consequently remain silent, provided the two coils are really identical. When the axle, however, is put into a state of torsion, the corresponding vanes will no longer pass before the coils at the same instant; for in A locomotive built according to his plans was first exhibited at the Paris Exhibition, and some time later he read before the English Institution of Mechanical Engineers a paper describing it and giving particulars as to its working on the Bayonne and Bearrity Railroad, France. From his latest report it appears that his engines required 3.3 pounds of fuel per horse-power per hour. They weigh full 196 tons, have a before the coils at the same instant; for in consequently in strong nitric acid. As soon as all of the mers, M. Corneault gave the results of a series of competitive trials with a light explosion. After this has occurred, add a few more of the torsion. Consequently to the amount of the torsion. Consequently at the same instant; for in consequence of the torsional strain, the vanes will no longer be in the same instant; for in consequence of the torsional strain, the vanes will a consequence of the torsional strain, the vanes will according to the competitive trials with a series of competitive trials with a description of which was published some time since. The leading idea, embodied in direction, because they are not induced at the same instant; for in consequence of the torsional strain, the vanes will accomotive trials with a series of competitive trials with a description of which was published some induction currents will no longer be in the same instant; for in consequence of the torsional strain, the vanes will accomotive trials with a series of competitive trials with a description of which was published some in strong nitric acid. As soon as all of the manganese has been oxidized the fumes will coase, coming of with a slight explosion. After this has occurred, add a few more of the size of the chorate of potash, boil for a minute or two, remove from the light and imperior in strong nitric acid. As soon as all of the manganese has been oxidized the fumes will accomotive trials with a description of which was published some in strong nitric acid. As soon as all of the manganese has been oxidize

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of a vane on the other wheel. Two precisely similar coils with steel cores, and of equal magnetic power, are placed at the same distances from the vanes of the wheels. The axes of the coils lie in a diametral plane the residue boiled with water, to the surface points of which I am indebted to Mr. Peters, of Troy, N. Y.) gives entire satisfaction, and by it we can determine manganess in one for any suspended impurities to settle out. The melted wax which was drawn off is cent.; naptha, 15 to 20 per cent.; paraffine, 36 to 50 per cent.; heavy lubricating oils, 15 to 20 per cent.; coke, 10 to 20 per cent. Before the French Society of Civil Engi-

two or three standardized solutions, but, on the contrary, the manganese is weighed as pyrophosphate of manganese, as sait of a pyrophosphate of manganese, as sait of a beginning by the steel, spiegel or iron is dissolved in strong nitric acid. sp. gr. 1.4. Evaporation to dryness is not necessary, unless the amount of silicon be large, as in the case of certain pig irons. Then, as a clogging of the filter in the subsequent filtration is any to follow dissolves first in a dish been nearly trobled. And all this here here. is apt to follow, dissolve first in a dish in hydrochloric acid, quickly evaporate to dryness, redissolve in the strong nitric acid, boil, and while boiling throw in crystals of chlorate of potash from time to time. Violent action will follow, yellow fumes be given off and the binoxide of mangane formed and precipitated, since it is insoluble in strong nitric acid. As soon as all of the manganese has been oxidized the fumes will

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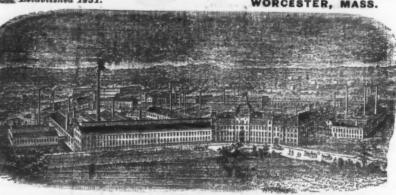
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The report of the sub-committee of the Ways and Means, on the substitute offered by Mr. McKinley for the motion of Mr.

Townsend, is as follows:
The substitute offered is an amendment to clause of section 2504 of the Revised atutes, which is in the following words: "Manufactures, articles, vessels and wares, not otherwise provided for, of brass, iron, lead, pewter and tin or other metal (except gold, silver, platina, copper and steel), or of which either of these metals shall be the component material of chief value; 35 per centum ad valorem." The purpose of the bill is to provide against a large class of evasions of the revenue laws, and to pre-vent frauds which are practiced under apparent legal sanction, and which, although violating the manifest intent of the statute, are held, under a long line of executive rulings, to be technically legal. The Secretary of the Treasury, in a letter to a mem ber of the committee, under date of February 8, speaking of this subject, says: "Some rule should be clearly defined as to where hoop, bar, plate or other forms of iron cease to be of such description and become manufactures of iron. seem that a general rule might be stated that in no case shall the manufactured iron bear a less duty than the iron of which it is The bill is meant to reach this and other

cases of like character. The clause which it is proposed to amend is the usual one found in general tariff laws, and is intended to cover such manufactures as were left out of a special designation, because unknown or having no commercial designation, and unforeseen at the time of the enactment of the law. The result has been that many new forms manufactured since the passage of the law, or if then manufactured not before imported, have escaped the full duty, which, in simple fairness, they ought to bear, and although such new forms are in an advanced stage of manufacture, yet they are admitted at a less rate than that applicable to the material of which they are made. The present law, as interpreted by the Treasury Department, requires only a statement of its operations to make apparent its gross inequality, and render obvious the instice of

equality, and remove the proposed amendment.

By reference to the statute it will be found that bar iron which is used for wagon tires pays a duty of 1½ cents per pound, and that hoop iron, such as is used for barrel hoops, pays the same duty; but should any amount of labor, no matter how trifling, be expended upon the above forms of iron, and which upon the above forms of iron, and which would not essentially increase their value but would give a new commercial designation to the product, under the existing inter-pretation of the law they are admitted at a much lower rate of duty than though they had been imported without any added labor or expense. It surely was not the purpose and been imported without any added aboror expense. It surely was not the purpose
of the law that bar iron, which pays a duty
of 1½ cents per pound, if found cut in
lengths, holes punched into the ends, and
riveted and welded together for use in mak
ing wagon tires, should pay a less duty than
the bar iron having no such labor or contrivance added. And yet this is the interpretation of the existing law, and, in the
opinion of your committee, is only an inopinion of your committee, is only an invitation to foreign manufacturers to expend

or loop riveted thereto, it is at once trans-formed from hoop iron to the general classi-fication called manufactures, and bears only fication called manufactures, and bears only a duty of 35 per cent ad valorem. A like condition is found as to galvanized iron, which bears a duty of 2 cents per pound; but when imported in plates of a peculiar construction, to be used for roofing, is held to be dutiable as "manufactures" of iron at 35 per cent ad valorem. Coal-hods, manufactured exclusively of galvanized iron, pay a very much less duty than simple galvanized iron, notwithstanding the increased labor and expense employed to put it in that form. It is done by foreign labor, and yet comes in at a less duty than the plain galcomes in at a less duty than the plain gal-vanised iron—a marked discrimination in

vanised iron—a marked discrimination in favor of the foreign and against the American laborer. The same is true as to bar and plate iron, which pays a specific duty; but when prepared, ready to be put together, for the manufacture of tanks, escapes the full duty, and is admitted under the clause of manufactures at 35 per cent. ad valorem.

The committee is of the opinion that neither the length of the hoop iron, nor the punched holes, nor that other device of a riveted buckle, or other change or contrivance, should remove it from the special designation of hoop iron, and relieve it from like duty. The iron, of whatever length, whether it be 4 feet or 20 feet, should bear the same duty, and any added labor, skilled or unskilled, to the iron itself of whatever form, instead of furnishing any reason for a reduction of the duty, upon the accepted form, instead of furnishing any reason for a reduction of the duty, upon the accepted principles of tariff legislation, gives the best reason why the duty should be increased, in justice to American labor and American manufactures. To hold any other view would be to make our revenue laws ready instruments for evasion and fraud. One dollar a ton in many cases will put the iron above considered in a form which evades the specific duty of 1½ to 2 cents per pound, and Greece appears to be surely drifting into fix duty of 1½ to 2 cents per pound, and transfers it to the title of "manufactures," where the Treasury would receive from \$15 to \$16 per ton less than is now paid upon the plain hoop or bar iron. It surely will not be contended that this is fair.

It will be found that the manner of the

It will be found that the report of the Ways and Means Committee to the House, in the second session of the 46th Congress (Report No. 1308), presented by Mr. Tucker, (Report No. 1308), presented by Mr. Tucker, although differing from the recommendation here made, confesses "that the committee sees no reason for putting different rates on these several classes, upon hoop and scroll iron, and the question therefore is—Shall the same rate be imposed? The almost unwarying principle of adjusting duties in people.

Raw Materials and Partial Manu- this country upon imports has been to impose a higher rate of duty upon manufactured articles than upon the crude or raw material, or the material in its simpler form; the duty to be increased as the labor expended thereon is increased, the purpose being to encourage American manufactur-ing, and to provide employment for labor. That this has been the governing principle is well sustained by the report of the minor-ity of the Ways and Means Committee, May

Ity of the Ways and Means Committee, May 11, 1380, which is here quoted:

"These principles were clearly recognized in the first tariff act (being the second law passed by the first Congress, July 4, 1789), and finds repeated illustration in every general tariff law since enacted. The act of April 12, 1816, sometimes called the Calhoun tariff (2 Statutes at Large 121) imposed on tariff (3 Statutes at Large, 312), imposed on hoop-iron (as the more advanced manufac-ture) a duty of \$2.50 per hundredweight, while the duty on bars and bolts (the less advanced), made by rolling, was \$1.50 per hundredweight. The act of April 20, 1818, (3 Statutes at Large, 460), imposed a duty of 50 cents per hundredweight on pig iron; on castings, 75 cents per hun-dredweight; on spikes, 3 cents per By the act of May 24, 1824, (4 Statutes at Large, 27), the duty on bar and bolt iron, not made by rolling, was 90 cents per hundredweight; on nail-rods and hoop-iron, 3 cents per pound; and on iron wire, 9 cents per pound. The same propor-tional rates were maintained in the act of July 14, 1832, (4 Statutes at Large, 58).
"The act of March 2, 1833 (4 Statutes at

Large, 629), which became historical, and was passed to allay the threats of nullifica-tion, provided for scaling down the duties of the then existing laws, year by year, but preserved the relative rates on the various forms of iron, and concluded by providing that in 1842 the duties should be at an ad valorem rate. The effect of this provision was to place a lighter duty upon crude manufactures, and a heavier duty upon those more advanced. The act of August 30, 1842, (5 Statutes at Large, 551), fixed a duty of \$9 per ton on pig iron; \$17 per ton on bar and bolt iron not manufactured by rolling; \$25 per ton on bar and bolt iron rolled and on here iron and continuous and rolled, and on hoop iron 21/2 cents per pound By the act of July 30, 1846 (9 Statutes at Large, 45, schedule six), a duty of 30 per cent. ad valorem was levied on all forms of iron, which again effectively recognized the doctrine that the duty should increase as the product became more valuable by skill and labor. The same principle was maintained in the act of March 3, 1857 (11 Statutes at Large, 192), in which the iron schedule of the preceding act was reduced to 24 per cent ad valorem.

"The act of March 2, 1862 (12 Statutes at

Large, 180), levied a duty of \$15 per ton on bar iron and \$20 per ton on band and hoop iron, and the act of July 14, 1862 (12 Stat-utes at Large, 544), which levied duties in addition to those of the former act, increased the duty on bar iron \$2 per ton and on hoop iron \$5, thus maintaining the principle of gradation even on the slight increase of rate. The provisions of the next general tariff act—that of June 30, 1864 (13 Statutes at Large, 203)—are still in force, and it is a clause of that act which this bill of the committee seeks to amend. The provisions of mittee seeks to amend. The provisions of the act of 1864 generally, and particularly the clauses under consideration, are in per-fect harmony with the principles which have marked the tariff legislation from the origin of the government under all parties and all administrations.

"By the existing law, pig iron pays a duty of \$7 per ton (Revised Statutes, p. 464). Bar or so per ton (Revised Statutes, p. 104). Bar iron, a more advanced form of manufacture, bears a duty of 1 cent to 1½ cents per pound, according to sizes. Iron wrought in slabs, blooms and loops, and other forms less finished than bars and more advanced than pig iron, is rated as bars. But band and hoop iron, being more advanced than bars, and representing more skill and labor, nava. and representing more skill and labor, pays a duty of 1½ to 1½ cents per pound, according to sizes. The anomaly recently forced into the law by the verdict of a jury made it possible for the foreign producer, by the expenditure of 5/ worth of labor upon a ton of hoop iron (that is, by cutting the long strips into shorter pieces and punching a hole in one end of each piece) to import this class of iron into the United States under the name of 'cut hoops,' at 35 per cent. ad valorem, which, at present prices, is more than one-third less than the duty on the long, uncut strips. This was a palpable evasion of the law, which the Treasury order of March 12 prevents. It is impossible to contrast the duty imposed by the existing law upon the various articles of iron and steel manufacture, without seeing that it is the manifest intention of these laws to impose a higher duty as the articles approach

impose a higher duty as the articles appreach completion."

To permit the law with the rulings under it to stand will destroy large and growing industries which are now in operation in the United States, and will discharge many thousands of laboring men employed in this branch of manufacture: will encourage the branch of manufacture; will encourage the foreign rival at the expense of our own people, without any essential benefits to the American consumer. This substitute only maintains the principle upon which all our tariff legislation in the past has been based: conforms to the recommendation of the Secretary of the Treasury; remedies a grievous wrong long borne by the home manufacturer; and saves an important production to the United States. The passage of the bill is therefore recommended

Greece appears to be surely drifting into war, as Turkey will not surrender the strongholds in dispute, and other powers have exhausted their arts of diplomacy.

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in every particular; superior to the very best brands of English Crown Chain, and specially

adapted for rafting, mining and dredging. BRADLEE & CO., 816 Richmond St., Philadelphia,
Manufacturers of
Dredging, Mining and Crane Chains, Rafting Chains, Toggies, Eye Boits and Log Dogs.
there are chains, made of an extra
flash be forbidden by law. They should also

Heating by Overhead Pipes

The Boston Mutual Manufacturers' Fire Insurance Company, after meeting much theoretical and some practical opposition to their scheme of overhead heating pipes, have the satisfaction of receiving strong commendations of the plan by a large num-ber of mills where its merits have been thoroughly tested. Recently the company sent to 52 of their members, comprising cotton, woolen, paper and jute mills and bleacheries, which they knew to be fitted wholly or in part with overhead pipes, asking, first, what departments were so heated; second, how they were placed; third, if the rooms were heated satisfactorily; fourth, the relative economy in the construction of pipe service as compared to side pipes : fifth. the relative economy in use; sixth, relative amount of heat surface in use; seventh, if there were any objections to this mode of placing pipes and what they were; and, eighth, if there were any reasons for assuming that overhead pipes had better not be adopted in rooms where there was no machinery, shafting or belting in motion. To these circulars 42 replies were received, of which two were absolutely unfavorable; two were unfavorable, but qualified by the fact that the lines of pipe were single 3 or 6 inch cast iron in very low rooms; one was favorable, with exceptions, and 37 were absolutely favora-ble. Among the ten from whom no answers had been received, there were several known to the company who would tolerate no other to the company who would tolerate no other mode of placing pipes. In respect to economy in heating, the answers vary from nothing to 25 per cent. saved; but as most mills are heated by exhaust steam, the company did not expect very definite replies on this point. It is pointed out, however, that the greatest economy is claimed where the pipes are hung from beams away from the wall, leading to the conclusion that rediction is leading to the conclusion that radiation is more effective when the pipes are open on all sides; when hung close to the wall a certain amount of heat must pass off through

While the company hesitate before recommending the overhead system for rooms in which there is no machinery moving to promote the circulation of the air, they still instance its use in sorting rooms in woolen and paper mills. But they do not hesitate to recommend absolutely the placing of coils of steam pipes for heating purposes over-head in all rooms in which there is even a small amount of shafting or belting in oper-ation. They suggest only the trial of coils of pipe placed overheadin the center of rooms of which the sides are occupied by sorting benches, carpenters' or metal workers' benches, or other appliances, even where there is no moving machinery or apparatus

Contracts for Firearms.-It falls to the lot of American manufacturers to furnish many of the most beligerent governments on both sides of the Atlantic with guns and ammunition. This week, in addition to contracts already spoken of, we hear of new orders for Greece and Turkey. Both are so well aware of the de-structiveness of American weapons, as was evidenced in the Franco-German war, that they come to this market to supply their wants. At the present time the Greeks have in course of execution 30,000 Reminghave in course of execution 30,000 Remington rifles and 300,000 cartridges. The former are sent off in regular weekly shipments to Eugland on through bills of lading to the Pireus, the chief shipping port of Greece, and the works at Illion, N. Y., are actively employed. When these bills are presented to our local Greek brokers they are cashed at sight. The orders from Turkey are on a larger scale, comprising 100,000 rifles, in addition to the order for 600,000 previously given and fully executed; also 30,000,000 cartridges which are being manufactured by the Winchester Arms Co. The rifles, like those previously ordered, are of the Martini-Henry pattern, which have a range and have killed their men at 2300 yards, to some Henry extent superseding fixed hatteries.

It having been intimated by parties interested in the copper deposits of Arizona and New Mexico that the production of Lake Superior has reached its maximum, the Houghton Mining Gazette says: "These editors must not lay the flattering unction to their souls, for the reason that our ability to produce copper of the best quality is practically limitless. In 1880 we contributed 25,000 tons of ingot copper, and, if put to it, we could double this amount annually in five years.

The Oregon Railway and Navigation Company will commence work on the tunnels between the Dalles and the Cascades within a month. They are directly on the river bank, and work will be directed from large scows now in course of construction. Complete double sets of machinery having been secured, the tunnels will be bored simultaneously from both ends, two gangs meeting in the center. Barring accidents and unlooked-for delays, the tunnel work will be completed within four months from the date of its commencement.

The fact that Mr. Elliott F. Shepard is William H. Vanderbilt's son-in-law, and directly interested as defendant in certain large claims by the United States government against sundry railroad corporations for arrears of internal revenue taxes, is urged as sufficient reason for rejecting his nomination as District Attorney for the Southern District of New York, And the point appears to be well taken.

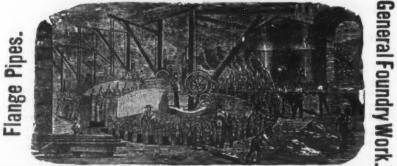
Work on the new tunnel through Bergen Hill, now being constructed for the New York, Ontario and Western Railroad Company, is temporarily suspended, the company having decided to alter the original line to a point some 50 or 60 feet further south, so as to have the terminus of the road at Union Hill instead of Weehawken.

A Staten Island coroner's jury, in giving seek for an enactment to prevent the explosion of oil under any circumstances.

JOHN JENKINS, Gen'l Manager.

A. H. McNEAL,

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SAW PLATES For Circular, Mulay, Mill, Gang, Drag, Pit and Cross-Cut Saws.

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STEEL FORGINGS of all descriptions Axles, Frog-points and plates, Switch-plates, Wrist-pins, Connecting-rods, Guide-bars, Piston-rods and all sorts of Railroad Forgings.

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GENERAL MACHINERY AND MARINE FORGINGS.
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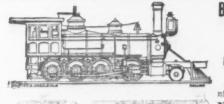
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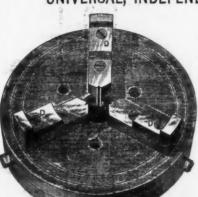
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By sliding a stud on the back of chuck it is instantly changed from Universal to Independent, and vice versa. Each Chuck is guaranteed perfect. All parts are made interchangeable. Only the very best matricely and the control of the terials used in their construction. Reversible or special jaws furnished when desired. We also manufacture

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Galvanized Hammock or Boat Snaps and Gaff we can learn, the pump has not been put Topsail Self-mousing Ship Hooks, Harness Snaps, Baby Snaps, Washer Cutters, Pocket Wrenches, Amateur Lathes, &c., &c., &c.

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PLANE IRONS. CAUTION.—Buyers should be on their guard and not have inferior goods palmed on them by un principled persons, who represent them as our make. Our tools are stamped "BUCK BROTHERS," and our labels have on our trade-mark, also "Riverlin Works."

PACKING RUBBER

WITH WIRE CLOTH INSERTION.

This Packing has almost entirely superseded the ordinary Sneet Packing with cloth insertion, and will generally last

can be surrounded with an interceptor, formed of plaited osiers, to prevent solid matters from entering and choking the pump; of this, however, there is little danger, as whatever passes the inlets can be carried up through the valves. The pump barrel is kept steady by means of an adjustable attachment to the ascending pipe shown at a consisting of a holt passing. adjustable attachment to the ascending pipe shown at o, consisting of a bolt passing through slots in the connecting bars. The plunger is without packing, and is made of the form shown at y, a plate, x, being cast into it for connecting it to the pump rod. The top of the fixed length of ascending pipe is made taper with a semicircular groove running around it, as shown at B, and MEDALS

A German Farm Pump. -- Vertical Section.

within which a rubber ring is placed to make the joint with the socket of the next length of pipe. The same form of joint is used for each section of pipe, as indicated on the length m. In order to empty the ascending pipe, an outlet is provided at D, consist-ing of a valve kept down by a heavy weight, but which may be raised by a cord. Messrs. but which may be raised by a cord. Messrs. Jacob & Becker, of Blücher Platz, Leipzig, who are the makers of this pump, comwho are the makers of this pump, com-menced its manufacture in 1877, since which time the demand has been so large that 9000 have been sold in Germany. Messrs. Watter A. Wood & Co., of 36 Worship street, E. C., are, we believe, interested in the introduction of this pump into Great Britain. Our readers will remember that this firm is the English branch of the well-known American mowing machine manufacturers. So far as into this market.

Water as a Blasting Power.

It appears that at some of the fiery coal pits near Barnsley, in Yorkshire, England, there is a system of blasting in vogue where water is used in addition to gunpowder, with the best possible results. The system is simple in the extreme, and, so far from its being costly, it is an economy, for, in the blasting operations performed with water in conjunction with gunpowder, a greater amount of work is done with considerably less powder and the powder is rendered harmless. The value of the foregoing will be best appreciated by a short description of the operation. Ordinarily, blasting with gunpowder is done somewhat as follows: A bore hole is made in the face of the coal about 2 inches in diameter and 4 or 5 feet deep. Into this hole a powder cartridge is inserted, with a slow fuse attached; the hole is then tamped—that is to say, it is filled with any available dry refuse rammed in tight; the fuse is lighted and vor streets relieved of their spectral disfigurements.

Have the cobwebs cleared from the skies and our streets relieved of their spectral disfigurements.

The first public'trial in the West of the American Brake Company's automatic freight-car brake was made last week on the St. Louis and San Francisco road between Springfield and Rolla. The train consisted of 12 loaded freight cars, 4 empty freight cars, a caboose and passenger coach, the whole train weighing 491 tons. Every car except the caboose and passenger coach was provided with the new brake. The conditions could hardly have been less favorable for a trial of the brake, but the trial resulted to the entire satisfaction of the railroad men on the train. In going down a 65-foot grade at the rate of 25 miles an hour the train was stopped in 62 seconds, inside of 410 yards, and in descending Dickson Hill, havering a grade of 110 feet to the mile, the train was slowed from a 35-mile rate to a 4-mile It appears that at some of the fiery coal refuse rammed in tight; the fuse is lighted and the cartridge fired. In this operation a flame, vory dangerous in flery pits, is created, and carbonic acid and sulphurous acid gases and smoke are generated. Blasting with water and gunpowder is performed in the following manner: Into the bore hole is inserted a powder cartridge, with fuse attached; next to the powder cartridge is inserted into the boro hole a tube con-taining water. These tubes should be as large as the bore hole will admit, and of any convenient length, the longer the better.
They may be made of any convenient cheap
material—thin tin plate, or ofstout brown
paper turned round on a wooden roller and
pasted together, the ends closed with corks; from three to ten times as long.

Adopted exclusively by many of the largest Iron Manufacturers. Send a small order and give it a trial.

Made in any length or thickness and about one yard wide.

AKRON RUBBER CO., Akron, Summit Co., Ohio.

A German Farm Pump.

The annexed illustration shows a form of force pump which has been designed with especial reference to the wants of German farmers. It is quite simple in design, and is so arranged that the parts are easily accessible. In Germany it is, we understand, sold at a very low price. It will be seen that the valves H H are hemispherical, and are provided beneath with a weighted stem to keep them vertical and fair on their seats, which consist of rubber rings u, held by angle rings v. The inlet chamber b may be bolted into a wooden base, and, if desired, can be surrounded with an interceptor,

Prospects for Underground Wires.

The telegraph companies admit that the embarrassments arising from the use of poles for the support of wires in running through cities will soon compel a resort to different methods, and that insulated wires laid under ground appear to be most feasible. laid under ground appear to be most feasible.

Searching inquiries by experts sent from
this country to Europe, and whose duty it
was to observe and report, only serve to
confirm this conclusion. Early in the introduction of poles for telegraphic purposes the
people of London, Paris and Berlin manifested a decided objection to the disfigurement of their streets by such constructions;
hence they proceeded to perfect their underment of their streets by such constructions; hence they proceeded to perfect their underground system. And the question is now asked—if it works well there, why will it not here? The question is precipitated in the United States not only by the greater severity of our storms, but telegraph wires here have multiplied beyond all precedent, and the poles become so overloaded by the mare waight of metal that it is now become mere weight of metal that it is now becoming necessary to run wires over the houseing necessary to run wires over the housetops, causing the inmates much annoyance
and subjecting the buildings to damage.
Mr. Prescott, president of two of our telephone companies, says: "The more valuable
the telegraph and telephone property becomes
the greater damage done by storms, and the
more urgent the necessity for putting the
wires under ground." This we can readily
believe after seeing a pile of wire and débris
deposited at the foot of Canal street after
the great storm, which was said to comprise

deposited at the foot of Canal street after the great storm, which was said to comprise 30 miles, all utterly destroyed.

The Western Union Telegraph Company seems to have reached the same conslusion, the president, Dr. Norvin Green, having been authorized by the Executive Committee to see what better plan could be devised. He reiterates in substance the statements made in these columns within the last month, that various plans have been considered, in which economy is a promiment sidered, in which economy is a promiment factor. Furthermore, the method of insulation most approved, and upon which cur-rent observations in practical working have an important bearing, is essentially an Amerian important bearing, is essentially an American system. The wires are wrapped in cotton tape saturated with parafflie oil, and then drawn through an iron tube. For more perfect insulation the tube is filled with oil, fed from a stand-pipe at the highest elevation. A pipe no more than 1½ inches in diameter has a capacity for 125 copper wires equal in conducting power to No. 6 iron wire, or 200 wires large enough for the iron wire, or 300 wires large enough for the telephone. Mr. Prescott argues that this plan is more economical than the English or German methods of insulating with gutta percha. The latter has a radical defect in percha. The latter has a radical defect in its liability to melt when exposed to the heat of a boiler or furnace, which may often happen; paraffine, on the other hand, whether congealed or heated, would not suffer as a non-conductor. This at present appears to be the main question—paraffine or gutta percha—but those who are in a position to judge, believe that something definite in regard to the whole matter will be reached this spring. Laying the tubes beneath the concrete in Broadway will be very expensive, estimated at \$2 a yard, but some other thoroughfare may be chosen for this purpose. In any case, a division of the expense pose. In any case, a division of the expense among the telegraph and telephone companies could be easily borne. The end once accomplished, it will be a great relief to have the cobwebs cleared from the skies

ing a grade of 110 feet to the mile, the train was slowed from a 35-mile rate to a 4-mile rate.

Thomas Rowland, Sr., one of the founders of the Rowland Steel and Spring Works, died of brain fever at his residence in Cheltenham, Pa., last week, at the age of SI years. The works were established by Thomas, Benjamin, William and Harvey Rowland, four brothers, for the manufacture of saws, but this branch was dropped in the manufacture of steel was begun, and in 1871 Norway shapes. The works were 1871 Norway shapes. The works were located at Frankford, and gave employment to 175 men and boys.

AUBURN FILE WORKS, Superior Hand-Cut

EVERY FILE WARRANTED. MADE FROM IMPORTED STEEL. **FULLER BROS., Sole Agents,** 89 Chambers and 71 Reade Streets, N. Y.

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Celebrated Hand-Cut American

HORSE RASPS AND FILES.





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PENNSYLVANIA FILE WORKS,

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Manufacture and keep in stock a full line of **FILES** and **RASPS** only, for which we claim all advantages over the ordinary goods, and ask domestic and foreign buyers to allow us to comfor their trade.

Superiority acknowledged wherever used, sold or exhibited.



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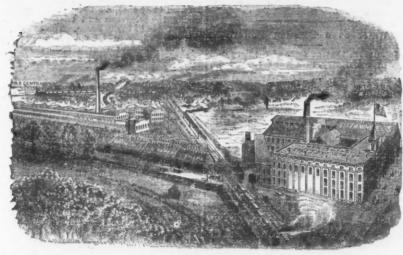
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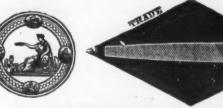
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*A paper read at the February Meeting of the blacking is not quite as good as the other was, american Institute of Mining Engineers.

*A paper read at the February Meeting of the blacking is not quite as good as the other was, the makes this discovery with every lot.

to Remove the Oxygen from Iron
After it has been Blown in a Besse-

BY S. A. FORD.

I would like to call the attention of our Bessemer steel manufacturers to a few facts in regard to the action of the manganese of the spiegel with the oxide of iron in the blown iron.

The oxygen is united with the iron as a magnetic oxide, as Gautier asserts, and this oxide is reduced to a part oxide by one atom of the manganese uniting with one atom of the oxygen of the magnetic oxide of iron. This oxide of manganese and the protoxide of iron unite with the silica which has been formed by the oxidation of the silicon in the pig iron. Mr. Snelus and others report finding in the blown iron from .29 per cent. to

35 per cent. of oxygen.

Many of our manufacturers, in making up their mixtures of spiegel to be added to their blows, take the .35 per cent. as correct, and think that the whole of it unites with the manganese, and add spiegel ac-cordingly, while in fact one-fourth of the .35 per cent. is all that is removed by the

I find that this amount is not at all constant; it varies according to the amount of manganese contained in the iron after the heat has been blown. I think the fact that we have been adding enough manganese to unite with the whole of the .35 per cent. of oxygen, caused a superintendent of one of our largest Bessemer works to remark "that he never made any calculation regarding the amount of manganese his steel would contain, for if he did he invariably went astray, so preferred to add manganese by the rule of thumb."

Scarce of worths are the Edgar Thomson

showing from .6 per cent. to.7 per cent. in them, while the superintendent of the con-verting department (who makes his calculations on the .35 per cent. of oxygen) claimed that there could not be that amount of manganese in the steel, as he only put in 200 pounds of 69 per cent. ferromanganese in a charge of 17,900 pounds of iron. Now, by using the .35 per cent. of oxygen as the amount to be removed by the manganese, amount to be removed by the manganese, this 200 pounds of ferromanganese would not give enough manganese, there being 56.38 pounds of oxygen in the iron and only 138 pounds of manganese in the 200 pounds of 69 per cent. ferromanganese. The 56.38 pounds of oxygen requires 193.88 pounds of manganese. Now, therefore, if the .35 per cent. of oxygen was the correct amount that would be united with the manganese. then would be united with the manganese, then the 200 pounds of ferromanganese was not enough, and some oxide of iron would be left in the steel and no manganese, or, at most, only a trace, instead of the .716 per cent. found by analysis. In order to get at the bottom of this matter, I first analyzed manganese. The ferromanganese I found contained 68.9 per cent. of manganese, while in the iron, after it had been blown, there was .024 per cent. of manganese. The heat of 17.900 pounds of metal had then 185 pounds of the ferromanganese added to it, and this steel had 608 per cent. of many and this steel had .608 per cent. of man-ganese./ I found that .63 per cent. of the iron was oxidized in blowing, and this .63 ganese. I tound that 33 per cent. of the iron was oxidized in blowing, and this .63 per cent. of iron makes .87 per cent. of the magnetic oxide of iron, and this .87 per cent. contains .24 per cent. of oxygen. Now, on one-fourth of this amount, or .06 per cent., according to Gautier, is all with which the manganese unites. By calculation given found that instead of having 56.38 grounds of oxygen to be removed, there is but 9.66 pounds, and instead of being compelled to have 193.88 pounds of manganese, or 285 pounds of 69 per cent. ferromanganese, 31.98 pounds of manganese, or 46.42 pounds of the ferromanganese, is all that is required to remove the oxygen, therefore, this steel, to which 185 pounds of the ferromanganese had been added, should have .606 per cent. of manganese, for there was .024 per cent. of manganese in the blown iron, and the amount of ferromanganese which was added would put .52 per cent. in the steel, carrying the total to 606 per cent. .582 per cent, in the steel, carrying the total to .606 per cent. By analysis, .608 per cent. was found a proof of the correctness of our assumption. We now, therefore, instead of adding manganese hap-hazard, not knowing what we will get in the steel, can calculate to within .02 or .03 per cent. of the amount that it will contain.

Some remark is occasioned by the announcement that an electrical reporting machine has been introduced with success not likely respond with sufficient prompti-tude. Electricity exactly meets the require-ments in furnishing a light and instantaneous

The World's Fair Commissioners are dis posed to regard with favor Gen. Grant's proposition to make a new effort to secure a ortion of Central Park for a site, rather than accept Inwood. Gen. Grant accompanies this suggestion with a brief argument in favor of allowing subscribers to vote for their own Finance Committee, to which the

turn. Despite this drawback, the trade is expected to open well this spring, with quick sales at remunerative prices. The special organs of the rubber interest are suggesting various remedies for speculation, some recommending that no purchases be made from those who lend themselves to the fostering of speculative interests, but the brokers, by whom the bulk of the business is done. probably have things much their own way.

Papers on Practical Founding .- XVII.

BY EDWARD KIRK,

LIGHT BLACKING.

As light blacking is designed only to prevent the heavy blacking from adhering to the pattern when it is returned to the mold, it requires to be made of some material that is very light and dry, and that will not rapidly absorb moisture from the sand. As charcoal has all these qualities and is a very charm the sand charcoal has all these qualities and is a very cheap material, it is the principal, and, I might say, the only, material used for light blacking. Though a little anthracite coal is sometimes mixed with the charcoal, it is done rather to adulterate the charcoal than for any good it does the blacking.

All the materials used in making a light or heavy blacking should be dried in an oven before they are ground, so as to drive of

before they are ground, so as to drive off any moisture they may contain. They will grind faster and finer when perfectly dry than when damp or wet.

BLACKING MILLS.

Various kinds of mills are used for grinding blacking, all of which have their pecuwent astray, so preferred to add manganese by the rule of thumb."

Several months ago the Edgar Thomson Steel Works had trouble as to the amount of blacking to be ground. In large foundries, manganese in their special steels, analysis where a considerable amount of blacking is used, a burr-stone mill, like those used for grinding flour, is employed. When this kind of mill is used, the materials to be ground are first broken or crushed into small lumps with a hammer or crusher and then mixed in proper proportions, put into the mill and ground to a fine powder. The powder is then bolted through very fine bolting cloth, after which it is ready for use. The small fast-running burrs are better than the large slow-running ones, for they throw out the blacking better and are not so liable to clog. The burr mill can be used for grinding any kind of blacking or facing, and is the fast-est grinding mill employed for that purpose.

In foundries where only a small amount of blacking is used, a slow grinding mill, called a ball mill, is employed for grinding it. This mill is arranged in the same way as a rattle barrel for cleaning castings, the only difference being that the ball mill is made perfectly tight so that the blacking left in the steel and no manganese, or, at made perfectly tight so that the blacking cannot escape through it, while the rattle cent. found by analysis. In order to get at the bottom of this matter, I first analyzed the pig iron, then the iron that ran into the converter in the pig iron. I found 1.945 per cent. of manganese in the metal, and, after going through the cupola, .937 per cent. of manganese. The forromanganese I found contained 63.9 per cent. of manganese, while in the iron, after it had been blown, there was .02; per cent. of manganese, The heat of 17.000 pounds of metal had then 18; der, and the more balls there are used in the mill the faster the blacking will be ground. The mill must be revolved slowly, say 20 or 30 revolutions per minute, so as to give the ball time to fall upon the blacking and not be carried around with the mill. This black-ing mill is one of the cheapest and most con-venient that can be made for a small founvenient that can be made for a small foundry, for it can be cast in the foundry; it can be set in some out-of-the-way place; connected with the main shaft by a small belt and allowed to run whenever the other machinery is run, so that the power to run it will cost little or nothing, and the mill needs no attention except to take out the blacking occasionally and put is forced. blacking occasionally and put in fresh ma-terial. Various other kinds of mills are used for grinding blacking, but the two which I have described are the cheapest and best in use at the present time.*

USING BLACKING.

The proper application of the blacking to the mold is as important a matter as the selection of a good blacking, for the best clacking will give as rough a surface to the castings as the poorest if it is not properly applied. Too much care cannot, therefore, be taken in applying either good or bad blacking to a mold. As before stated, the blacking is applied in the form of a dust, this being the most convenient way of ap-plying it to a green-sand mold of any kind, because it can be evenly distributed without touching the mold with the hand or a tool, and running the risk of breaking down some small part. In order to distribute this dust evenly, a small muslin bag is about half filled with it and shaken over the mold by taking held of the upper and and helding it. machine has been introduced with success in the French Legislative Chambers. Supt. Small, of the New York Gold and Stock Telegraph Company, says the apparatus taking hold of the upper end and holding it taking hold of the upper end and holding it directly over and within 6 inches of the mold. While it is being shaken the bag is carried over the different parts of the mold so as to distribute the blacking evenly. In so as to distribute the blacking evenly. In order to give a first-class surface to the castso as to distribute the oldcking evenly. In order to give a first-class surface to the casting, care must be taken not to dust the blacking on either too thickly or too thinly. If the blacking be dusted on too thickly it will not adhere to the sand, but will be washed before the molten metal into waves or streaks, or carried into the corners of the mould, making them round and untrue. If the blacking be dusted on too thinly, it is burnt up by the molten metal and assists in burning the sand to the casting, instead of protecting it from the molten metal. Either too much or too little blacking, therefore, will give the casting a rougher surface than it would have if no blacking at all were change that might be for the benefit of the Commission.

Speculation in the rubber market has become chronic. Under the influence of a "syndicate," which is only a term interchangeable with "corner," the market is manipulated at the caprice of the few directly concerned. Prices have been steadily advancing, until of late they are compara
*A paper read at the February Meeting of the casting a rougher surface than it would have if no blacking at all were used. To give the casting a very fine, smooth surface, the blacking must be evenly and finely distributed over the mold. The surface of the casting depends a great deal upon the quality of the blacking bags used, for the coarser and more open the muslin is that is used for bags, the more coarsely and roughly the blacking will be dusted upon the mold and the coarser and rougher the surface of "Note.—The poorest molder in the found and the coarser and rougher the surface of "Note.—The poorest molder in the found and the coarser and rougher the surface of the casting a rougher surface than it would have if no blacking at all were used. To give the casting a very fine, smooth surface, the blacking must be evenly and finely distributed over the mold. The surface of the casting depends a great deal upon the quality of the blacking bags used, for the coarser and more open the musl in is that is used for bags, the more coarsely and roughly the blacking are the surface.

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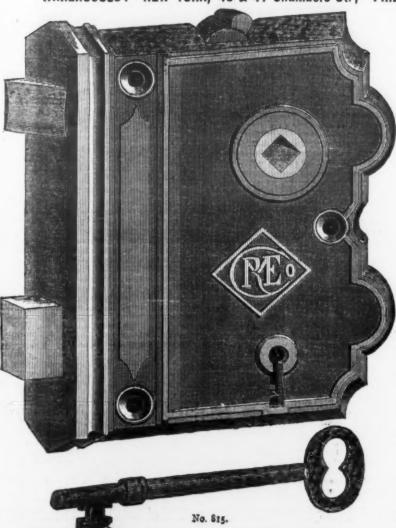
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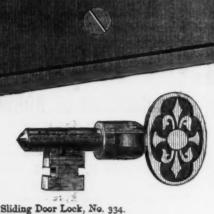
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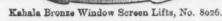














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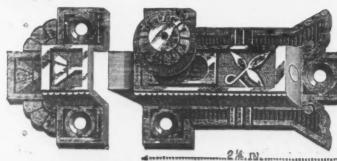


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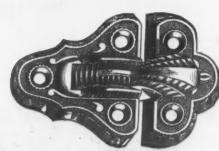


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the casting will be; and, in the same way. the finer the muslin, the finer and smoother the surface of the casting will be. There will be just as much difference in the surface of the casting when a coarse or fine bag is used for the blacking, as when a coarse or fine riddle is used for the sand. Stove molders who work by the piece dislike to use a fine black ing bag as much as they do a fine riddle, because it takes longer to shake the blacking upon the mold. If he wishes to obtain a first-class surface on the castings, the foun der should furnish the molders with blacking bags made of fine unbleached muslin, and he should see that none other than those and he should see that hone other than those he furnishes are used in the foundry. He should also see that blacking bags are not used too long, for they soon get full of holes, and a molder might as well throw the blacking on the mold with his band as dust it through a bag that is full of holes. In order to save time, the blacking should be best in the state. to save time, the blacking should be kept in a dry place out of the foundry, and a small amount for immediate use should always be kept in the core oven, or some other warm place, so as to have it perfectly dry, that it may dust through the fine bags freely. In most foundries only two blacking bags are used by each molder—one for heavy and the other for light blacking; but in some of the stove foundries in the Eastern States, where the finest of work is done, the blacking bags are so fine that two of them are used for heavy blacking. The moulder takes a bag heavy blacking. The moulder takes a bag in each hand and shakes them both at once. Cash Capital, - \$600,000

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Surplus to Policy Holders 1460,000

The ach hand and shakes them both at once. This is done to save time, for the bags are so fine that if only one were used a great deal of time would be taken up in dusting the mold. In foundries where castings are made with a rough surface, it will generally be found that the blacking bags used are about as coarse and open as a No. 12 riddle. These throw the blacking on the molds in Spots or too thickly, and give a rough surface, the same both at once.

This is done to save time, for the bags are so fine that if only one were used a great deal of time would be taken up in dusting the mold. In foundries where castings are made with a rough surface, it will generally be found that the blacking bags used are about as coarse and open as a No. 12 riddle. These throw the blacking on the molds in the same based on the save time, for the bags are so fine that if only one were used a great deal of time would be taken up in dusting the mold. In foundries where castings are made with a rough surface, it will generally be found that the blacking bags used are about as coarse and open as a No. 12 riddle. These throw the blacking on the molds in the same bags are so fine that if only one were used a great deal of time would be taken up in dusting the mold. In foundries where castings are Surplus to Policy Holders 1,460,000 spots or too thickly, and give a rough surface to the casting. This rough surface is generally attributed to poor sand or poor blacking, but it is as often caused by the coarse, open blacking bags and the careless way in which the blacking is applied to the

The fine dust gathered from the foundry beams and shelves is used in some foundries for dusting the molds, while other foundries procure a very fine sand, which they thoroughly dry in an oven and use for the same purpose. These materials are employed, Life Policies in Force, over 11,900 Claims Paid in Life Dep't, \$1,650,000 the mold; and on some sands they have the desired effect and produce much smoother castings than could be obtained in the same and without them. sand without them. When either beam dust or dry sand is used, it is put into a blacking bag and dusted upon the mold before the heavy blacking. Some founders mix the beam dust or dry sand with the heavy blacking, but it is better to use them separately.

The Iron Ores of the James River Valley, Virginia.

No. Accident Policies issued, 650,000

For many years the iron deposits of the James River Valley have attracted the attention of iron masters and capitalists. The tention of iron masters and capitalists. The statements that have been made as to their extent and value have been received with considerable credulity, and it has only been within the past five years that sufficient de-velopments have been made, and of such a character, as to remove the doubts of iron-masters as to the value of this region, while even yet the old ideas, so long prevalent, are held by many.

That these deposits have been long known, however, and their value appreciated in past years is evidenced by the many old workings, around which, even now, are large piles of ore, and by the extensive cinder banks and traces of old blast furnaces that exist on some of the very properties that are now attracting the most attention. The reasons for the abandonment of these workings and of iron making on these properties were the of iron making on these properties were the same that have operated in many other sec-tions of the country—the exhaustion of the the country—the extraction of the rear fuel supply, which was charcoal, and the changes in the lines of transportation, with the cost of moving freight, consequent on the introduction of railroads. That it was veins, and the fact that these veins have not the quality of the iron made from the with the cost of moving freight, consequent on the introduction of railroads. That it was not the quality of the iron made from the Railway Stations and at Agencies generally.

Much used by travelers, but not limited to accidents of travel.

Solutions and at Agencies generally.

Much used by travelers, but not limited to accidents of travel.

Solutions and at Agencies generally.

Much used by travelers, but not limited to accidents of travel.

Solutions and at Agencies generally.

Much used by travelers, but not limited to accidents of travel.

There are still furnaces in blast in the Upper James Valley whose product fully

The Chestnut Mountain system includes justifies these legends.

As already stated, it has been during the last five years that the extent of these deposits have been made known, and their geological and chemical character, as well as their metallurgical value, determined. The faculty of the Virginia Military Institute and of the Washington and Lee University, both situate at Lexington, Va., have devoted much valuable time to a thorough and careful examination of the valley geologically. ful examination of the valley geologically. In addition to this, large amounts of the ores have been used in Northern furnaces, and a practical test, on a large scale, of their quality made. It is stated that from the workings of Messrs. Naylor & Co., about 16 miles below Lynchburg, some 60,000 tons of ore have been sold for this year's delivery, mainly to Western Pennsylvania furnaces, among which are Cambria. Edgar Thomson among which are Cambria, Edgar Thomson, Charlotte and Dunbar.

Heretofore the transportation question as been a serious one. Many deposits of has been a serious one. has been a serious one. Many deposits of the most valuable ores have been so situated with reference to transportation to the fuel that it has been well-nigh impossible to make them available—certainly not at any cost that would justify their use. The State make them available—certainly not at any cost that would justify their use. The State of Virginia for years seemed determined to perpetuate this condition of affairs. The James River and Kanawha Canal, which runs through this valley, had been the especial pet of the State of Virginia for half a century. It had paid its debts, fostered it by legislation, prohibited, in their charters, railroads built parallel to it from trespassing on its territory, and thus leaving the slow methods of canal transportation, with expensive transhipments, as the only method of moving the ore to the mineral fuel or to furnaces builts. Further, some of the largest deposits of ore in the valley were on the Cow that the specimens to show that the vein that experience seems to show that the vein

Pasture River, one of the upper branches of the James, where no canal had been built, but along which a railroad had been graded but along which a railroad had been graded by the canal company, which was toe poor to build it, and which under its franchises from the State no one else could build. This condition has been changed by the

This condition has been changed by the organization and construction of the Richmond and Allegheny Railroad. This company has bought the property and franchises of the James River Canal from the corporators and the State, and are rapidly building a road along the tow-path of the canal from Richmond to Buchanan, the head of canal navigation, and from Buchanan to Williamsons, about two miles west of Clifton Forge. A branch road will also be built up the north branch of the James from Balcony Falls to Lexington, a total distance of cony Falls to Lexington, a total distance of

250 miles.

This road, when completed (which will be in 1881), will furnish the needed transportation facilities for moving the ores of the James Valley to market at Williamsons. It will connect with the Chesapeake and Ohio Railroad, which will enable these ores to reach the Ohio, and by this river they can be easily moved to the Pittsburgh and West Pennsylvania furnaces on the north and to the moved to the Pittsburgh and West Pennsylvania furnaces on the north, and to the Western furnaces, or even further south. At Buchanan it will cross the Valley Railroad, which is being rapidly built down the great Valley of Virginia, and at Lynchburg with the Virginia Midland, and by either of these routes the ores can be taken by all rail to the furnaces of Maryland and Pennsylvania, and even further north. Over 100 miles of this road are built, and the balance is under contract. Its low grades, none exceeding this road are built, and the balance is under contract. Its low grades, none exceeding 15 feet to the mile, give a strong presumption in favor of low freights for ore. Should a read that is now being surveyed through the valleys of the Greenbrier, Tygerts and Monongahela to Pittsburgh be built, these ores will have a still greater value to Pittsburgh and West Pennsylvania.

During a recent visit to Virginia an opportunity was offered to thoroughly examine the ores of this valley, especially those at and near Mount Athos and at Clifton Forge, which may be regarded as types.

which may be regarded as types.

First, as to those in the Mount Athos region, or that part of the James River ore belt below Lynchburg. At Mount Athos, five miles below Lynchburg, the James turns abruptly to the northeast, being deflected by the massive quartzites which carry the mountain. It pursues this general direction for some 50 miles to Scottsville, when it resumes its southeasterly direction. For this entire distance the ore-bearing rocks have been traced, their northwestern boundary being the Buffalo ridge, while their extensions and southeastern boundary still ramain undetermined. Sufficient exploraremain undetermined. Sufficient explorations, however, indicate that these rocks have a width of several miles, and that they extend through the entire State in a southwesterly direction. That part of the belt which begins at the point mentioned, where the James turns to the northeast, has been most thoroughly exploitated. On the property of the Birmingham Coal and Iron Company, which begins at this point and extends some 6½ miles down the river, nnmerous openings and cuts have been made in the ore-bearing ridges and hills, which have developed at least sixteen veins of ore. These have been divided into four

made in the ore-bearing ridges and hills, which have developed at least sixteen veins of ore. These have been divided into four belts or systems—first, the Mount Athos; second, the Chestnut Mountain; third, the red ore; fourth, the pot ore. The ore-bearing formation on this property, which may be taken as a type of the other properties in this region, consists of alternations of quartzites, micaceous, talcose and chloritic slates, having a dip of 10 to 45 degrees, usually, however, nearly vertical.

Examinations on the first of these belts—the Mount Athos—have established the existence of six well defined veins of ore, numbered from 1 to 6, of which two are specular, two magnetic and specular, one limonite and one manganiferous, varying in thickness from 1½ to 14 feet, between well-defined walls, the foot being usually slate and the hanging wall quartzite, but sometimes conglomerate. The ore from some of these veins bears a strong resemblance to the Republic and Champion ores of Lake Superior. They will be very easily mined, as may be judged from the character of the

The Chestnut Mountain system includes The Chestnut Mountain system includes seven well-defined veins of ore. No. 7 is a fine, high grade, micaceous, specular ore, on which two shafts have been sunk to a depth of 90 feet and connected, showing the vein to be 12 feet wide in solid ore, one-third of which will yield 65 per cent. of metallic iron, and the balance 40 per cent. to 55 per cent., all free from sulphur and low in phosphorus.

No. 14 is the red ore belt, a series of brown and red hematites alternating with slate, with a total breadth of from 300 to 600 feet, the ore veins being from 2 feet to 20 feet. The red hematites of this beit are low in phosphorus and free from sulphur, carrying about 40 per cent. to 60 per cent. of metallic

The pot ore belt is numbered 15 and 16. No. 16 is 20 to 30 feet wide, of solid ore, with 50 per cent. of metallic iron, but too high in phosphorus for steel irons, making, however, a very soft, tough iron, highly regarded years ago for iron rails and ord-

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Plantsville, Conn.,

Manufacturers of the

BEST QUALITY CARRIAGE MAKERS' HARDWARE.

Manufacture the Largest Variety of Forged Carriage Irons of Best Material and Workmanship.

PRICES LOW FOR QUALITY OF WORK FURNISHED.

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GUN WADS, Black and Pink Edge, Guaranteed Superior to any Imported,

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CHENEY ANVIL & VISE CO., Detroit; Mich.

REMOVAL that we have removed from No. 295 THIRD AVENUE to No. 37 Warren Street, near Church St., M. FARRINGTON & CO.,

LOCKS, KNOBS, GONGS, BLANK KEYS, Wrought Store Door and Flush Bolts, Silver Plated, Ornamental Bronze and other Hardware.



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LANE BROS., Millbrook, N. Y. General Agency, GRAHAM & HAINES, 113 Chambers St., New York,

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81.90 per Dozen.

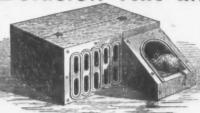
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Stamped Tinware, Fry Pans, Coal Hods and Tinners' Trimmings. Price Lists on application

Delusion Rat and Mouse Trap, Manufactured by



CLAUDIUS JONES & CO., ERIE, Penna.

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This is the only Self-setting Trap on the market, and the most successful.

All orders direct to

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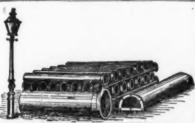


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FOR WATER AND GAS. Lamp Posts, Valves, &c.,

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N. Y. MALLET and HANDLE WORKS

Calkers', Carpenters', Stone Cutters' Tin, Copper and Boiler Makers', MALLETS,

Hawsing Beetles, Hawsing and Calking Irons also all kinds of Handles, Sledge, Chisel and Ham mer Handles. Also

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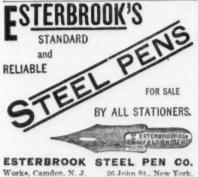
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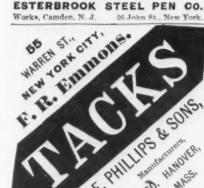
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RUBBER BELTING and PACKING.

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MBBER BELT WEIGHT-4000LBS ENGTH - 331.FT WIDTH - 4 FEET BELTING AN Gaskets and Rings.

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Emery Wheels and Packing.



Piston-Rod

ORIGINAL Solid Vulcanite **EMERY WHEELS**

LARGE WHEELS MADE ON CAST-IRON CENTER IF DESIRED.

The properties of these Wheels are such that they can be used with great advantage and economy for cutting, grinding, and finishing Wrought and Cast Iron, Chilled Iron, Hardened Steel, Slate, Marble, Glass, etc. These Wheels are extensively used by manufacturers of Hardware, Cutlery, Edge Tools, Plows, Safes, Stoves, Fire Arms, Wagon Springs, Axles, Skates, Agricultural Implements, and small Machinery of almost every description. PATENT ELASTIC

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For Packing the Piston Rods & Valve Stems of Steam Engines & Pumps. B represents that part of the packing which, when in use, is in contact with the Piston rod.
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This Packing is made in lengths of about 20 feet, and of all sizes from ¾ to 2 inches square.

Corrugated Rubber Mats and Matting, For Halls, Flooring, Stone and



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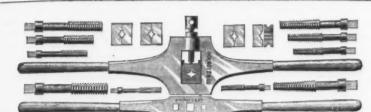
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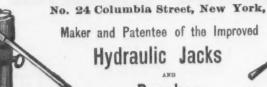
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Roller Tube Expanders and Direct Acting Steam Hammers. Communications by letter will receive prompt attention. Jacks for pressing on Car Wheels or Crank Pins made to order.



not only grows wide as it descends, but, in the case of low grade surface ores, increases in richness.

ANALYSES.

	No. z.	No. 3.	No. 7
Silicie Acid (quartz.)	3,04	14.67	4.10
Titanic "	0.10	0.12	0.15
Phosphoric Acid	O. II	0.08	0.02
Ferric Oxide	91.39	82. 18	90.74
Manganic Oxide	0.17	0.38	OLIX
Alumina	4.20	1.96	4-43
Magnesia	0.15	0.06	0.13
Lime	0.30	0.23	0.20
Water	0.64	0.18	0.04
	-	-	
Total	100,00	100,00	100,00
** - **	-		-
Metallic Iron	63.97	57.68	65.71
Phosphorus	0.048	0.035	0.000
No. No.	NY NY.	87	27

The following analyses show the nature of the re of bed No. 14:

41.52 33.59 48.33 30.880 0.265 0.079 0.47 none 56.800 50.632 68.002 0.970 1.836 0.008 Metallic Iron ...

18 as follows:

No. 1. No. 3. No. 4. No. to. No. 13. No. 16.

Met. Iron. 65.714 62.987 57.600 62.126 42.02 39.337

Phos. 0.46 c.172 0.048 0.159 1.01 0.110

Sulphur . . none . 0.02 none 0.001 0.032

Sundry analyses of No. 7 show the following:

 Metallic Iron
 62.760
 67.05
 67.797
 68.340

 Phosphorus
 0.015
 0.01
 0.019
 0.008

 Sulphur
 0.031
 none
 trace

At points further down the river these same ores are being mined quite extensively, especially by Messrs. Naylor & Co., and very thorough explorations have been made. The chief points of mining, in their order of occurrence down the river, are Stapleton,

occurrence down the river, are Stapleton, Riverton and Greenway. Reporting on these deposits, Dr. J. C. Kimball says:

"The ores are disposed in beds or veins between strata of different composition. They seem to me to be, unlike the ferriferous schists of Michigan and Missouri, segregated deposits of ore which have been metamorphosed along with the whole series of strata. The degree of metamorphism has strata. The degree of metamorphism has been slight, as compared with the Huronian schists, and in some cases they are still soft or only partially altered. While specular hematite is the prevailing form of iron ore, some of the deposits are in part in the state of magnetic oxide; others, again, are admixtures of magnetic and specular oxides; while still others, especially those of which limestone forms one of the walls, are compact brown hematite (limonite)—at least near the surface."

It is not necessary to enter into the details of the formations at these points, as they are similar to those at Mount Athos. As showing the character of these ores, however, we

Locality.				tract,	Payne tract, No. 1		RIVERVILLE AND	-		10% Wingfield	STAPLETON.		Stapleton Cliff	Lee Red	Kent Tinsley Manganiferous (34.56 Mn). Maude, average shipments, January to Marc	Greenway Mine, Vein 16. Harris tract, 3.5 ft. on foot wall. Hematite, Payne tract, No. 3. Magnetite, Payne tract, No. 3. Specular, Coxe tract No. 3. Specular Coxe tract No. 3. Specular Coxe tract No. 3. Specular Coxe tract No. 3. RIVERVILLE AND WINGE STALLEON. Cherry Tree Six foot Vein. Sapieton Cliff.
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\$4.65 46.09 47.20 \$6.00 \$9.92 59.92 63.43	57.68 \$3.98	66.32 61.12 62.63	Metallic Iron.
0.06	29 0.023 0.009 0.035	0.035	Phos- phorus.
	75.69	98.24	Ferric Oxide.
54.669	Nome. 0.117 0.327 0.99	*0	Manga- nous Oxide.
	None, 4.43 1.90 3.76	0.53 1.830	Alumina.
	Trace 0.23 1.29	9	Lime.
	0 0 0 13	0.07	Magnesia
	4.370 4.10 14.67 16.60	3.29 3.96 7.08 7.87	Silica.
	0.053	0.08	Phosphoric Acid.
	None.	0.177	Sulphur.
	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Trace	Titanic Acid.
	0.04		Water.
Dr. C. P. Williams.	Booth, Garrett & Blair Dr. F. A. Genth, Dr. F. A. Genth, Dr. F. A. Genth,	Dr. F. A. Genth. Booth, Garrett & Blair Cambria Iron Co. Dr. C. P. Williams. Dr. C. P. Williams.	Chemist.

* Magnetic oxide of iron. + Ferrous oxide. (To be continued.)

Morrison Brothers, old established iron brokers of Glasgow, have failed. Their liabilities are serious, but principally affect Middlesborough, England. Kirk Brothers, ironmasters of Workington and Maryport, have also failed. Their liabilities are stated at £100,000. If their works are closed a number of men will be thrown out of employment. employment.

Mr. Chas. F. Manness, superintendent of the steel converting department of the Lackawanna Iron and Coal Company, at Scranton, reports to us that his mill made for the week ending February 26, in 139½ consecutive hours, or 408 heats, 3003 tons of steel ingots.

half a cent a pound, on account of the rise in the price of pig lead.

LABOR AND WAGES.

The following notice is posted up through the Connellsville coke regions, and is creating considerable of a sensation: "Notice—We, the miners of Connellsville coke regions, believe we are unjustly dealt with when coke operators will ask us to mine coal and draw coke for a price we cannot with our greatest exertions sustain ourselves and our families. We therefore demand 5 cents per wagon of an advance for mining coal, and To cents of an advance for drawing coke. If we do not have a satisfactory answer before Tuesday, March 1, 1881, we will stop work. This is our personal demand—one and all. By General Committee. Dum Vivimus Vivamus.'

There has been a strike at Wilson, Walker & Co's., Pittsburgh, because the men were not paid for crop ends. The difficulty has been adjusted.

The stove molders of Pittsburgh have asked for an increase of 10 per cent. in their wages. The proprietors of two founderies have, we understand, granted the advance. advance.

A New Albany (Ind.) dispatch says: The stove molders' strike is still on. The molders have made a demand for 25 per cent. advance, which is 10 per cent. more than the Cincinnati molders struck for. than the Cincinnati molders struck for. The proprietors at New Albany are willing to pay the Cincinnati and Louisville prices, but no more. The works here have always paid their card rates of wages, and have always been strongly union, while the Louisville founders refuse to be controlled by the union. The demand of 10 per cent more than Cincinnati prices here is so manifestly unjust that the strikers receive no sympathy from the public.

The case of the Commonwealth against D. R. Jones, general secretary of the Coal Miners' Association, which was on trial in Greensburg, Pa., has resulted in a verdict of guilty. Jones was charged by the Waverly Coal Company with conspiracy in inducing the miners of said company to strike. A great many witnesses were called for the prosecution, but the defense did not

for the prosecution, but the defense did not call any, the defendant depending entirely call any, the defendant depending entirely upon witnesses for the prosecution to make out a case for him, or rather to fail in making out a case for the prosecution. The trial was watched with great interest by working people throughout the country, and especially by members of trades unions.

The stove plate molders of Pittsburgh have received an advance of 10 per cent. This has moved the machinery molders to ask a like increase in pay. A meeting has been held and committee appointed to frame

been held and committee appointed to frame a new scale of wages. As soon as this com-mittee reports it will be voted upon, and a demand made for wages about 121/2 per cent, higher than they are now receiving. About 400 molders in Cincinnati struck

for an increase of 25 per cent. The does not include the stove molders. It is reported that the Edgar Thomson Steel Works Company, at Braddocks, has

bought an acre of ground near its works and proposes to erect two large hotels, which will be run on the co-operative plan, and their workmen will be boarded for \$15

The stove molders at Witman's and Henderson, Kahn & Co.'s, at Hanging Rock, received an advance of 15 per cent. on their wages. The wages here are governed by those paid in Cincinnati.

The death is announced in England of Mr. William Henderson, long known as a prominent metallurgist and chemist. Mr. Henderson was born in 1827, at Westmuir, Scotland, and early in life became connected with the copper industry of Wales and England. He introduced a process of extractive law grade supports and silvert covers. ing low-grade carbonate and silicate copper ores by means of hydrochloric acid, and brought into successful use the Longmaid process of extracting copper from roasted pyrites by submitting them to chlorinizing, roasting and subsequent extraction and precipitation by means of scrap iron. In con cipitation by means of scrap iron. In connection with the great alkali industry of Great Britain, this created a new and growing source of supply for copper from the low grade pyrites of Spain and Portugal, the annual production reaching 20,000 to 25,000 tons. Mr. Henderson also started and developed the manufacture of ferromanganese in crucibles, a method which has, however of late given way to emplifying block. ever, of late, given way to smelting in blast

Plates for the torpedo and other vessels likely to be exposed to the fire of the Nor denfeldt gun are to be increased in thickness, owing to the penetrative power of that gun. Hitherto plates that were rifle proof were considered sufficient, but as a 1-inch Nordenfeldt gun can pierce a 34-inch steel plate at 200 yards, and a 36 inch plate at 300 yards, it is considered desirable to increase the thickness of the plates hitherto

Prof. Bell, who has lately returned from England, is gathering information in behalf of the government to determine the feasi-bility of opening a route through Hudson Bay, for the transportion of grain from the northwest. It is claimed that grain can be laid down in Liverpool cheaper by the pro-posed route than by the all-rail route, the Canada Pacific Railroad.

The recent failure of the New York agency of the German Trading Company, which has its headquarters at Frankfort, it is now admitted was the effect of serious los on consignments of railway metals. The boom at first netted handsome profits, but

The new Anchor Line steamer Furnessia, now due at this port, is 445 feet in length between perpendiculars, with a displace-ment of 9900 tons, and until the appearance of the City of Rome, will enjoy the dis-tinction of being the largest merchant ship

onsecutive hours, or 408 heats, 3003 tons of teel ingots.

The price of white lead has been advanced alf a cent a pound, on account of the rise at the price of pig lead.

M. Mallié, of the gun foundry at Ruelle, near Angoulême, France, reports that he is frequently using electricity for transmitting power in drilling holes into cast iron, steel and other metal, and in pumping water.

The Iron Age

Metallurgical Review.

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On Monday last Judge Sedgwick, in the Superior Court, denied the application of W. S. Williams for an injunction restraining the consolidation of the three overland telegraph companies, or for an injunction restraining an increase of capital stock by the Western Union consolidated company. He grants the injunction asked to restrain the directors from making, according to the proposed method, the distribution of \$15,-26,520 of increase of capital stock as reprepurchase, construction and equipment of 640,339, against \$75,185,130 in 1880.

additional lines, wires and general plant since July 1, 1880. In the course of his decision, Chief Justice Sedgwick says: The officers or directors who are to use this power of disposition are trustees, and are bound to use the power not only as directed specifically by statute, but under the general obligation of trustees to cestui qui trust. In the present case the directors are, in disposing of shares in the pro-posed increase of capital stock, to be considered as trustees, with trustee obligations to the plaintiff, with other shareholders who already hold shares of the present capital stock. The terms of the agreement which the directors propose to carry out, do not provide or contemplate that the distribution of the new shares among the present shareholders shall be made upon equivalent value being 'returned, or being pronounced to be

returned, by the shareholders-nor, indeed, upon any new value to the company. There has been no exercise of the discretion and judgment of the directors as to what is the present value of these investments, or of the other part of the investment, namely, the stock in other telegraph companies and the real estate. The parties in interest are entitled to the due exercise of this discretion, and, should a dividend be declared, the manner in which it shall be used and enjoyed is under the control of the shareholders individually."

The Funding Bill and the National Banks.

The events of the past week show very clearly that the national banks have alto gether too much latitude in the matter of surrendering their circulation, and that while their privilege in this matter should not be so abridged as to deprive them of any just rights, Congress cannot too soon change the law so as to place it out of their power to contract the currency fifteen or twenty millions of dollars without notice, forceing the government to unusual and undesirable expedients to svert a panic. Congress may have made a mistake in framing a bill containing so many objectionable features as the Funding bill, but the banks are entitled to no public sympathy for having put themselves in an attitude of practical rebellion, especially as all the evil consequences of such a course fall upon the business community. It was, no doubt, unwise for Congress to meddle with the banks at all through the fifth section of the bill, especially as it gave the proposed refunding operations something of the appearance of a forced loan. It was also unwise not to assume that the banks would find it to their interest to purchase the 3 per cent. bonds without compulsion, since they were fully aware that the fives and sixes now deposited to secure circulation would be redeemed. and that in consequence of the resulting appreciation of 4 per cents. on the strength of our urgent investment demand, the three per cents. would be the cheapest securities the banks could buy to deposit. Left to themselves, the banks would have adopted exactly the course desired by the Treasury Department; but they chose to see in the wording of the bill an intimation that a grave doubt existed in the minds of those who framed the law as to the ability of the Treasury to sell the 3 per cents., and, without regard to the consequences, they adopted a course calculated to throw the country into a panic and force the Secretary of the Treasury to take measures to relieve a stringency which, if not relieved, would entail the gravest consequences. Now that they have shown their power for mischief, and their willingness to exercise that power when it suits them, they have only themjudicious restraints they cannot expect any lar sympathy they the public interest than the national banks Dr. Dudley's position. have manifested during the past fortnight.

The only gratifying feature of this most unfortunate squeeze was the proof it gave of as will appear from his remarks printed fidelity which justifies the confidence with the soundness of the general commercial elsewhere in this issue. Unless Mr. Wells position. Had there been any unsoundness in trade, a panic of the worst kind might have been precipitated. Solid mercantile houses found it impossible to borrow money at I per cent. per day premium, and holders of securities on which they were forced to realize suffered heavy losses. But, in spite the work of students and give it the sanction of all this, there have been no failures of of their signatures. Dr. Dudley took pains consequence, showing better than anything to secure as an assistant the best man he else could the wholesome condition of busi- could find, and analyses which he accepts ness. Had it not been so, the extent of and becomes responsible for cannot be lightly the resulting disaster could not have been questioned without discrediting him. estimated.

The Institute and the Chemists.

We have the following interesting letter from Captain Wm. R. Jones, general super-intendent of the Edgar Thomson Steel Works, relative to our article in last week's

To the Editor of The Iron Age .- DEAR SIR : In your issue of February 24, you editorially review the discussion on Dr. Dudley's paper, read before the February meeting of the Institute of Mining Engineers, held in Philadelphia. The point you particularly dwell on is the "mischlevous influence upon a very large and important class who will cain little from it avenut avenue. who will gain little from it, except a prejudice Now, the only attacks made on a certain cla

of chemists were made by Mr. R. W. Hunt, of the Troy Works, who is a chemist himself, by Mr. William Kent, another chemist, and Dr. Wendell of Troy, who, as a chemist, has a national reputation, and myself. Now, as the parties above mentioned are the guilty ones, all but myself be ing chemists, and in my part of the discussion was particular in giving those chemists who really are a disgrace to the profession what I considered their just dues, and was equally careful to recog-nize the ability, honesty and rectitude of another class of chemists, I fail to see the justness of the correctness of the editorial in question. I for my part fully recognize the importance and in-valuable aid rendered all metallurgical operations by competent chemists, and also well know the pad results that accrue from the work of bad and incompetent chemists. Since the Philadelphia meeting a case in point has been presented to me. A chemist of a certain Bassemer Works reported in a sample of steel phosphorus, c. 102, c. 102, o.107. Another chemist who analyzed the same drillings found phosphorus c.117, o.145, o.161. Now, one of these chemists must be in error, yet the firm making the steel believe in the corectness of their chemist's analyses, who has never been sustained in any of his analyses by any reputable chemist in the country, and has only been sustained by certain other chemists who are also a diagrace to the profession and bring discredit on American steel, owing to the fact that there is a wide difference between the determinations of one vide difference between the determinations of one class of chemists and those of another and more reputable class of chemists. Is there any reason why this fact should not be disclosed? As to the question of procuring good chemists by paying reasonable wages, I think the leading works reasonable wages, I think the leading works appreciate the importance of this fact. Dr. Dudley admits that the greater portion of the analyses of the 64 rails for phosphor and manganese were made by his assistant. In view of the stubborn fact so often presented to me, I questioned if it were politic to accept these analyses until they were verified by chemists of unques-tioned ability and experience. I do not say that the analyses were incorrect, but suggest that on so important a subject it were better to place the analyses beyond dispute. "Practice makes perfect," and the chemists employed by the principal Bessemer works are chemists of repu-tation and experience. So, I may say, are the chemists in the leading laboratories in the country, such as Booth & Garrett, Dr. Otto Wuth, Prof. A. L. MacCreath and others. So important are chemistry and chemists in the proper running of large establishments, that I consider the discussion will have a good effect, rather than a mis chievous influence, on all engaged in steel making.

That there is a large class of incompetent botches retained under the name of chemists who deserve exposure, no one who has much to do with them doubts, and that there is a class of intelligent and conscientious chemists who have the full confidence of the practical men controlling large enter-prises, is also an undisputed fact. A discussion of his character exposes the first class, and gives full credit and honor to the latter class. I believe that no one who participated in the discussion ques-tions the honesty, integrity or the scientific attainments of Dr. Dudley, and had the Doctor presented the analyses as his own work, no one would have questioned their correctness; but phosphorus and manganase determinations having been made by an assistant, we naturally think we would prefer to verify the correctnes of his determinations by chemists of a experience. Yours, WM. R. Jo experience. Yours,

We do not see that 'Capt. Jones' letter presents the matter in a new light. We still think that our view of the discussion was justified, and that Capt. Jones is in some respects mistaken. Mr. Hunt may be a chemist, as he is a gentleman of many accomplishments, but he is not so rated professionally. Dr. Wendell, in his paper, said nothing calculated to discredit chemists or their work; on the contrary, he simply discusses the conclusions of Dr. Dudley respecting the proper amount of manganese in Bessemer steel, and what mechanical tests should be made to determine selves to blame if Congress clips their quality. Mr. Kent is a mechanical engineer. wings, and should they be surrounded by not a chemist. With regard to the gentleman who made the analyses on which Dr. Dudley worked, we think it quite unf mr to brece now have cannot safely be trusted with in- him arbitrarily in the class of incompetent published in advance of his annual report ture, carpets, wall coverings and ornaments, stitutions which show no more regard for chemists, even for the purpose of weakening some very interesting statistics which seem that Dr. Dudley is himself fully prepared to Swank's production statistics are the best accept these determinations as trustworthy, has shown himself incompetent to grapple with the difficulties of phosphorus and manganese determinations, the indorsement which Dr. Dudley has given him should previous years as follows: be regarded as sufficient. This is not a case similar to those in which professors accept

We fully concede the right of any one to intelligently dispute an analysis, but it is a The foreign trade statistics of the United | fact which most of those who attended the States for the month of January, show an meeting will not question, that those who excess of domestic exports over imports of sought to break down Dr. Dudley's argu-\$28,916,438, against an excess of \$11,788,- ments by impeaching his data, said many 685 in January, 1880. The large excess this things which would warrant a popular year is due chiefly to the heavy shipments impression that the chances of finding truth of cotton from Southern ports, with very through analysis were extremely slim. If light importations at those ports. The excess Dr. Dudley had come to the meeting with a of exports of produce and merchandise for lot of hypotheses based on analyses gathered the seven months of the fiscal year ended with January was \$190,626,943, against 51,48,309,103 for the previous fiscal year. The excess of imports of gold and silver coin belt at a man who should under take to make stoves on what they good to been right and proper to throw out his been right and proper to throw out his gross tons of imported pig iron. Adding the the seven months of the fiscal year ended at hap-hazard from all sorts of irresponsible and bullion for the month of January was whole argument as unsafe and misleading. \$4,282,343, against \$165,565 in 1880, and for What Capt. Jones says about incompetent senting investment of earnings in the the seven months ended with January \$72,- and irresponsible chemists, may correctly represent the views of our most progressive year.

vigorous condemnations were quite in place during this particular discussion.

As neither Dr. Dudley nor his assistant, chemists who disgrace the profession, there was no good reason why the dishonest or incompetent men should be lashed over their of abandoned stacks. shoulders. Dr. Dudley does not need that we should champion his reputation, and we have no desire to appear as apologists for the class of analysts which Captain Jones condemns with merited severity; but we do regret the tone of the discussion, and should be very glad to learn that we were mistaken in supposing that it would have a mischiev ous influence upon a large class of people who do not now appreciate honest and intelligent chemical work for half what it is

Congress and the Tariff. The reports from Washington are to the effect that certain of the Democratic politicians purpose to declare that a belief in a tariff for revenue only is a cardinal principle in their creed, and to make a desperate attempt to compel the acceptance of this 'credo," or to pronounce the greater excommunication upon those who are heretical. The Hurd resolutions, which proposed a formal acceptance by Congress of the belief of the Manchester school of political conomy, have already been printed and discussed in these columns. They have not met with any great favor from the Committee of Ways and Means, to whom they were referred. In fact Congressmen do not cry for them in public, however much they may coax for them in private, and the Ways and Means Committee have buried them in its pigeon holes. Mr. Hurd, however, does not intend to give up in this way, and, at a dinner which he lately gave, he organized a Revenue Tariff League of Congressmen, and purposes to make a fight for what he considers principle. We imagine that after enduring and cherishing in its inner ranks for many years such a protectionist as Speaker Randall, a man who promises to be the Democratic leader of the next House. any attempt to read protectionists out of the party will be futile.

Mr. Chalmers, of Mississippi, proposes to introduce the "sliding scale" into tariff legislation. He has introduced the following resolutions :

Whereas, The only excuse for a protective tariff is to encourage infant manufactures and protect the free labor of the United States against the

slave and pauper labor of foreign countries, therefore, to secure the benefits intended for American laborers,
Resolved, That the Secretary of the Treasury shall, as soon as practicable, ascertain and report the cost of producing in foreign countries all articles on which custom duties are now levied and the cost of producing the same articles in the United States; and whenever the cost of producing any article which has been manufactured or ing any article which has been manufactured or produced in the United States for ten years shall be less in any foreign country than the cost of producing the same article in the United. States, then the custom duty on such article shall not exceed the sum equal to the difference between the wages paid in the foreign country where such article is more cheaply produced and wages paid laborers employed in producing the same article in the United States, with the cost of transportain the United States, with the cost of transporta tion added thereto.

This is a very pretty theory, but it will hardly work in practice. It is evident that Mr. Chalmers is a mere tyro, and that, like amateur mechanicians, he has not allowed for friction. Indeed, we think it will be impossible to improve on the old way-a tariff for protection-because it is to the advantage not only of our manufacturers and laborers to have it so, but because it is to the advantage of the whole country. The present tariff may be a little out of order. and some repairs may be necessary, but it will answer as a basis, and with these repairs it will be all right.

Mr. James M. Swank, secretary of the We have no doubt to skim the cream of that document. Mr. we have, and are compiled with a care and which they are accepted at home and abroad. He figures for 1880 a pig-iron production in the United States of 4,295,414 net tons of 2000 pounds, comparing with

Of the 1880 product, 1,807,657 tons were anthracite iron, 1,950,205 bituminous or coke and 537,558 charcoal. Of stocks and consumption Mr. Swank says :

The stocks of domestic pig iron on hand and unclose of 1880 aggregated 456,658 net tons, against 141,674 tons in 1879, 574,565 tons in 1878, 642,351 tons in 1877, 686,798 tons in 1876, 760,908 tons in 1875 and 705,784 tons in 1874. The consumption of pig iron in 188c can only be approximated. We produced 3.835.191 gross tons, and imported, as nearly as can now be ascertained, 700,000 tons, giving a total supply of 4.535,191 gross tons. We increased the stocks of domestic pig iron during the year the increase of domestic stocks to the warehouse stocks, we have 445.640 gross tons to be deducted from the total supply, which gives us 4.089,551 gross tons as the probable consumption of the

ironmasters, but we do not see that these In 1880, 28 furnaces were built in the United States, 23 more were begun, one abandoned furnace was revived and innumerable others rebuilt or improved. Mr. Mr. Wells, belongs to the class of disreputable Swank mentions 14 projected furnaces which he knows of as sure to be built, and reports an addition of 17 for 1880 to the list

Gen. Grant and the World's Fair.

If there is any lingering doubt as to holdng the World's Fair of 1881, it must be speedily dispelled. So says Gen. Grant, the executive head of the enterprise, who is expecting to leave for Mexico within ten days or a fortnight, to return perhaps two or three months later, and, consequently, is deliberating with some anxiety in regard to the choice of a site in Central Park. He says, in an interview with a reporter, that he advises this change "because the people of New York seem to be indifferent to a fair held in Inwood." In urging this proposition, he suggests several radical measures, such as the inclosure of the Museum of Natural History building in Manhattan Square; also of the Metropolitan Museum of Art building, soon to be completed, as well as 60 acres of the Park, known as North Meadows, on which another permanent building may possibly be erected. A temporary railway through Eighty-fifth street, he thinks, connecting the three inclosures, would make a very neat arrangement, providing all needed facilities, and the Park proper would be preserved from injury. But just here the Park Commissioners are liable to differ. In fact, to make much advance in that direction may take "all summer," and more, too. If the election of Gen. Grant to the presidency of the Fair Commission incidentally raises the questions here involved, some of the members may conclude that they have "caught a Tartar. In any case, the conflict of opinions, if any conclusion is reached before Gen. Grant's departure, must be short, sharp and decisive. He is reported as saving All that is done must be done soon. The

next few weeks will determine whether an inter-national exhibition is to be held in New York in 1883. A change in the feeling of the people must take place soon or the project must be abandoned. When I was chosen president of the commission I said that I cou d give little attention to its work for several months on account of my expected absence, but that next year I might be able to do more. I relied upon others to raise the funds and organize the work. If the people who wish the fair to be held at Inwood will come forward and subscribe for the stock, let them do it now. If they will not, then something must be done to interest the people at large, so that they will sub-scribe. Whatever is done needs to be done at

The unfortunate disagreement among the original Executive Committee, followed so soon by other agitating questions, the public mind being very sensitive on the subject of "park desecrating," are not omens for good. But it is noticed that Gen. Grant has yet full faith in the coming exhibition; though Chicago may stand ready to take it off the hands of New York, as has been intimated, guaranteeing a complete success, he believes that there is every prospect of a greater exhibition than the world has ever seen if New York rises to grapple with the opportunity.

Art Progress in the Stove Trade.

Those who attended the meetings of the National Association of Stove Manufacturers at Detroit two weeks ago, must have noticed that as a class the stove manufactures are not disposed to give much attention to the study of art. This is, perhaps, a little surprising when we remember that in every department of manufacture which meets the requirements of domestic economy, there has been a very rapid and sustained art progress during the past few years. No article of furniture in a house is more conspicuous than the stove, but while it is posible to purchase the best designs in the stove remains a black, ugly obtrusive mass of iron, overloaded with graceless ornament and covered with inharmonious and distressing nickel plate.

Naturally, the commercial consideration is paramount. Manufacturers do not be lieve that the public want anything diferent from what they are now getting, and as they make stoves to sell and for no other purpose, it is not to be expected that they will make anything which they consider unsaleable. They say it is not their business to educate the public taste, and no one will venture to dispute so sensible a proposition. They deny that any thing which sells and yields them a profit is meretricious or bad. They reply to an appeal for higher standards of excellence in shape and ornamentation, that people in comfortable circumstances who have good taste and the means of gratifying it, do not buy stoves; old in the hands of makers or their agents at the and that those who do, like the very things which the art critics condemn. They have tried the experiment of offering their stoves nickel trimmed and plain, and have reached the mistaken conclusion that their inability to sell the plain stoves proves anything more than that the kind of stoves they make look better with nickel than without it. They find them left on his hands at the end of the season, and that the theorists who venture to advise them are enthusiasts who know more about reversed curves and conventionalized ornamentation, than they do of

the conditions under which money can be made in the stove business.

Now, if we have correctly summarized the views of the trade at large, it would look as if the man who attempted to lead the trade in the direction of an art progress was wasting his time. But perhaps he is not, after all. Let us see what is actually going on in the business. Within a very few years there has been a marked improvement in everything pertaining to the proportioning and ornamentation of stoves. Men who affect to hold art in contempt, show their sincerity by not studying it; but they are being drawn, without knowing it, into the current of art progress, and every year they learn to despise something which they admired the year before. Whether they are any nearer a correct appreciation of beauty, or any nearer comprehending that art is not a matter of taste merely, but of law, is doubtful. Nevertheless, they are moving, and every one is anxious to do something better than his neighbors have done. We doubt if there is one founder in the country who will not, in something which he does this year, show a progress over what he did last year, or in any previous year. Few of them are likely to learn that chamfered edges and incised ornamentation belong to wood, rather than to metal, and that black iron as a material of construction calls for a treatment peculiar to itself, or what the principles of that treatment are; but they will strive after art and beauty according to the light which is in them, and many are even now quietly appealing to recognized authorities for suggestions and designs.

Meanwhile, the public taste which these gentlemen wisely decline the task of educating, is being educated for them in a thousand ways. Nickel is going out of fashion, and we know of several prominent manufacturers who have discovered that their trade does not call for it and does not want it. One manufacturer of large experience stated in the meeting of the association, that he regarded nickel as a passing fashion, and believed that the time is not far distant when they would look back upon the stoves now made and wonder that they were ever sold. A few say that they will use more nickel this year than ever before; but many say they will use less, and some propose to use practically none. We could tell a geat many things, if it did not involve a violation of confidence, which to us are satisfactory evidences of the fact that the leaven of art is at work. And while it is probably true that it will be a long time be fore the whole lump is leavened, that time will come eventually, and the man who can intelligently discuss the principles of art as applied to proportioning and ornamentation will be a welcome guest at the meetings of the trade. At present, he and the men who venture to give the results of a study of the laws of combustion or of experiments in The Eaton Bill—The Next Speakerfuel economy in heating or cooking daty, are classed together as outsiders who are permitted to take up the time of the "convention" unprofitably. Until the trade shall have been brought to regard these questions as practical, and as factors in the equation of business success, they are not likely to receive any more attention than that demanded by a proper regard for the courtesy due gentlemen who are invited by the Executive Committee to discuss themwhich means, listen to what is said or read and then change the subject as quickly as possible. Art has already had its beginnings; and there are some who do not believe that, so far as its working parts are concerned, one stove is as good as another. We do not expect the concerns making four. or five, or six thousand tons to lead progress in art or science. It is enough that they are following, perhaps without knowing it, the lead of those whose competition they do not recognize, but whose influence in educating the public taste they cannot but feel. There is a demand for beautiful stoves, and if more made more would be sold. demand for constructions which do not use four or five hundred pounds of fuel to do the work which could be done with one hundred Roth will increase as they are met; and the demands which the large stove manufacturers now refuse to consider, will one day be so great that it will pay them to call on science and art to help them meet it.

Efforts for the commercial development and regeneration of Mexico by means of railroads, are likely to be followed by corresponding efforts to increase the importance of our diplomatic services, not only with Mexico, but the entire Southern hemisphere. Judge Bedford, of Colorado, reports that Members of Congress from the far West and Pacific slope are deeply interested in such efforts, and contemplate means to promote this object. East year our domestic exports to Mexico and South and Central America amounted to \$30,190,998, while our imports amounted to \$76,201,494. The aggregate balance against the United States was \$46,010,496. Most notable among the new railroad lines being projected from the Western States into Mexico are the Denver and Rio Grande and the Atchison, Topeka and Santa Fé. Thousands of dollars of American capital are flowing into that country to develop the mines, and when Colorado and other Western States are connected with the City of Mexico by direct railroad communica tion, new commercial fields will be immediately opened up. As the facilities for com-

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stitution of railways for the pack-horse would alone make a difference amounting to revolution. Aside from the facilities thus offered, the demand for whatever ministers either to comfort or luxury are sure to increase as the means for their at 35 per cent. ad valorem. supply increase. At present a wide range of industries is without life, because it is impossible to transport machinery excepting by methods which forbid the hope of profit. Judge Bedford declares that as soon as railroad communication is established with the interior of Mexico, our domestic export trade, instead of amounting to \$5,671,134, can be made to reach \$100,000,000 per annum. Like changes doubtless await other sections, should nothing occur to cloud the present cheering prospects.

A dreadful menace is thrown out by Mr. Albert Fink, the great railroad pool manager, when he says, in reviewing Judge Black's speech: "There are some 1200 railroad companies in this country. While many combinations and organizations exist between them, having for their object the proper transaction of their own and the public business, there has so far been no combination formed between the railroad companies to resist unitedly the unjust attacks made, or to correct the many misrepresentations regarding them. Unity of action in this respect may beco necessary if these attacks are continued." Twelve hundred railroad companies united to resist attack would be truly formidable. The bare suggestion is startling.

Throughout trade circles an earnest hope s expressed that Secretary Evarts shall not be embarrassed by the appropriation com mittees in continuing his admirable system of monthly publication of consular reports. Three have been issued thus far, imparting exactly that kind of information which is needed for the extension of our export trade. and which all mercantile classes have learned to appreciate. It would be a mistaken omy to discontinue them.

Broken coke as a fuel for domestic purses is rapidly coming into use in the neighborhood of Pittsburgh. It is used more in competition with anthracite than with bituminous coal, and it seems to answer all purposes. In cooking in stoves that are arranged for anthracite it answers admirably, though in ranges adapted to bituminous coal, with its heavy flame, it does not do so well. In magazine stoves, if the proper size is used, it feeds as well as anthracite.

WASHINGTON NOTES.

ship—The New Cabinet—Tests of Iron and Steel—The Duty on Tank

(From Our Own Correspondent.) WASHINGTON, D. C., March 2, 1881.

The friends of the Eaton Tariff Commis-The friends of the Eaton Tariff Commission Bill are making great efforts to secure action on that measure before the adjournment of Congress, but the prospects are not flattering. The bill, as is known, has already passed the Senate, and is now on the calendar of the House, from which it can be taken by a majority vote for consideration, but the danger, should it be taken up, is that it, will give rise to so much discussion. it will give rise to so much discussion and threaten the consumption of so much time that it would be laid aside again. The desirability of a commission for this purpose, organized as provided, is very generally conceded, but there are those who wish to talk about it, and for this reason the chances

are decidedly against its consideration.

The supporters of Representative Hiscock, of New York, for Speaker of the next House, of New York, for Speaker of the next House, are still actively at work in his interest, but as there is now no probability of an extra session of Congress, they will have an opportunity to carry on a protracted campaign in his behalf through the summer and fall. Meanwhile, the friends of Mr. Kasson fall. Meanwhile, the friends of Mr. Kasson had been connected with these works for are also ready for a vigorous contest, and many years, and was highly esteemed by the

to continue the investigation and tests of iron and steel which were begun under the act of March 3, 1875. The scientific value of these tests is admitted. The machine at the Springfield Armory is the most perfect apparatus for the purpose indicated that has

The following decision has just been promulgated by the Secretary of the Treasury concerning the duty on tank irons.

TREASURY DEPARTMENT, Feb. 24, 1881 Collector of Customs, New York.—Sir: The department duly received your letter of the 15th inst. in relation to the appeals of John S. Leng from your assessment of duty at the rate of 11/4 and 11/2 cents per pound according to gauge, on certain iron tank plates, so alled, imported per Parthia January 30 and April 12, and Wyoming February

The appellant claimed that this iron was dutiable at 35 per cent. ad valorem as a man-ufacture of iron not otherwise provided for, upon the ground that by its degree or con-dition of manufacture it had passed beyond the category of boiler or other plate iron, or ately opened up. As the facilities for commerce increase, the United States will find a market for large quantities of mining machinery, implements of industry of all

descriptions, domestic utensils, &c. The sub- of plate or sheet iron this merchandise had been advanced, but the appraiser stated in general terms that the principles adopted in decision of March 10, 1880, on corrugated roofing iron, and in that of October 12, 1880, on iron car truck channels, would make the plates covered by these appeals dutiable

report of the appraiser was adopted as affording a basis for the classification of the merchandise, and on November 23, 1830, you were directed to liquidate the entries at the rate of 35 per cent. ad valorem, as entered by the importer.

In response to an inquiry of this department, the appraiser reported, under date of the 8th instant, that "the plates differ in no the 8th instant, that "the plates differ in no essential particular from tank plates subject to the duty originally assessed, except in the fact that they were cut to sizes and punched," and that "these plates are of various sizes and are punched and cut ready for use, and require only to be put together and riveted to become complete tanks." The law regulates the duties on boiler or other plate iron excerding to its thickness. other plate iron according to its thickness, but makes no mention of sizes; hence the fact that this plate iron was of various sizes cannot affect its classification for assessment of duty. Beyond being cut to unequal sizes it in no wise differed from ordinary plate from, except in being punched with holes to receive the rivets, a process which no more makes it a completed manufacture of iron than does the punching of hoop iron out to lengths remove it from the category of hoop iron to that of completed manufactures.

Such slight changes in an article primarily iable to a higher rate of duty are generally resorted to only as a trick or device to evade the law, and such practices should be resist-ed by all the power at the command of this department, and, in reporting on cases of this character, custom officers should give such full descriptions of the merchandise and its degree of manufacture as to present fully the facts in the case to the department Upon the facts now presented, the department decides that the portion of this iron

which was not less than 3-16ths of an inch in thickness, is clearly dutiable at 1 1/2 cents per pound.

The iron which was less than 3-16ths of

an inch in thickness is dutiable at \$25 per ton, under the provision for boiler or other plate iron not otherwise provided for, or at the rates provided for "sheet iron, common or black," according as the iron may be found on examination to be "boiler or plate iron" or "sheet iron, common or black." iron" or "sheet iron, common or black."
You will readjust the entries accordingly

and notify the importer to pay the increased duties.

If such demand be not complied with

within 30 days, you will place the matter in the hands of the District Attorney for prose-Very respectfully, John Sherman, Sec'y. cution.

Growth of Telegraphy .- The Railroad Gazette has the following: The develop-ment of telegraphs in the United States was recently investigated with considerable care and pains by a gentleman who gives the fol-lowing as the result of his inquiries, made of

the people best informed in the different telegraph companies:

Thus from 1860 to 1870-the period including the war—there was an increase of 162 per cent. in the length of line and 220 per cent. in length of wires, and from 1870 to 1880 an increase of 84 per cent. in miles of line and 119 per cent. in miles of wire; and in the three years from 1877 to 1880 the increase was no less than 27½ per cent. in line and 35½ in wire, and this at a time when the country would seem to have been already pretty well supplied. There are now 350 people in the country to one mile of line and 143 to one mile of wire. By the same investigation it appeared that at the end of 1880 there were about 14,000 telegraph offices in the country and 24,000 employees, sending 50,000,000 messages yearly

are mustering votes wherever they can get them.

The all-important topic just now is the the side of the poer. By his business associated the side of the poer. The all-important topic just now is the cabinet, and while no conclusions will be reached on the subject until to-morrow, there are strong grounds for the belief that Senators Windom or Allison will be selected for Secretary of the Treasury. Mr. Blaine, however, is the only selection positively determined upon.

The All-important topic just now is the the fife of the part. By his business associate at the mean topic of the part. By his business associates he was regarded as a strictly honorable man. He was buried at Youngstown, O., by the Masonic fraternity of that city. The A. A., of I. S., and T. W., of Sharon, and meanly all the employees of the Westerman Mill accompanied the remains in a special train to Youngstown. It was by all odds the rection of the was regarded as a strictly honorable man. He was buried at Youngstown, O., by the Masonic fraternity of that city. The Masonic fraternity of that city. The Masonic fraternity of that city. The A. A., of I. S., and T. W., of Sharon, and Mill accompanied the remains in a special train to Youngstown. It was by all odds train to Youngstown. It was by all odds train to Youngstown in the properties of the Westerman was trained to the train to Youngstown. termined upon.

The House Committee on Manufactures the most imposing funeral procession ever have reported a bill appropriating \$20,000 seen in Sharon.

Edison Removes to New York Thomas A. Edison has removed from Men!o Park to this city with his family and all out one of his assistants, and is now living at No. 65 Fith avenue. The house was formerly known as the Bishop mansion, and has been leased for a long term of years by the Edison Electric Light Company. The technical department of the business is now carried on here. The offices of the Edison Luminating Company of New York, the Edison Electric Light Company of Great Britain and Europe, and the Edison Electri Railway, will also be in the building. Vic President Eaton said yesterday that Edison's nvention was complete, and they were at the wires in the streets, and to light the street lamps; they had received three to four thousand applications to light houses and hotels. The company box and hotels. The company, however, would contract to light cities only.

The greater part of the metal of the

AMERICAN INSTITUTE OF MINING ENGINEERS.

PHILADELPHIA MEETING.

The Third Session

There was an unusually large attendance at the session on Thursday morning, as it was generally understood that the event of the meeting, the reading of Dr. C. B. Dud-ley's paper "On the Wearing Power of Steel Rails in Relation to their Chemical Composition and Physical Properties," was to come off, and as it was known that many prominent gentlemen had signified their intention to take part in the discussion, which was at the same time to embrace Mr. C. P. Sandberg's paper on "Rail Specifica-tions and Rail Inspection in Europe," read at the Lake Superior meeting. After Dr. Dudley had read abstracts from his paper, which had been in the hands of the memwhich had been in the hands of the members for some time, Mr. A. L. Holley was called upon. In a paper entitled "On Rail Patterns," which we shall publish at an early date, he made an eloquent and impressive appeal for the substitution of a limited number of standard sections of steel rails for the large variety now in current use. Both this and the paper following it, by Mr. Ashbel Welsh, had direct reference to the subject brought up by Mr. Sandberg.
Mr. Welsh confined his remarks almost exclusively to the questions involved in the history and development of the form of the steel rail and the best methods of inspec

The discussion on Dr. Dudley's paper roper was opened by Mr. Robert W. Hunt, of the Troy Steel Works, who, after refer-ring to some trouble experienced in always obtaining correct analytical results, expressed some hesitation in accepting the figures of the chemical tests made by Dr. Dudley's assistant. He stated that the formulas pursued by the steel works have been and are now quite wide of the one which Dr. Dudley continues to recommend, and held that the Pennsylvania Railroad had, during the last 18 months, put in few rails that have not contained fully 0.35 per cent. of carbon and I per cent. of manga-neso, and that the use of this formula probably considerably antedated that time. These rails did not break or crush, because they were laid upon a better roadbed; were rolled from sounder ingots and carefully hot-straightened. The question how they would straightened. The question how they would wear must be left to the future. To his mind, Dr. Dudley's conclusions were not convincing, and he felt the necessity of repeating a former criticism, that the number of samples were too few to build a theory upon, because the absence of data on many of the conditions of manipulation could only be made up by an immense number of samples. Mr. Hunt objected to the use of averages in reaching the conclusions in such investigations as exceedingly dangerous, and illustrated his point by referring to a and illustrated his point by referring to a number of the specimens submitted by Mr. Dudley. In these the wearing qual-ity differed widely, while the chemi-cal analysis showed great similarity. If averages were taken, he would point to one in Dr. Dudley's list which had carbon, 0.483 per cent.; phosphorus, 0.035; silicon, 0.408, and manganese, 0.782 per cent., and was a slow wearing rail that had seen II years service, and to another rail in the track of the Boston and Albany Railroad that contained carbon, 0.36 per cent.; phosphorus, 0.124; silicon, 0.469, and manganese, 0.571 per cent., and had been in the track seven years. He would like to know track seven years. He would like to know why it would not do to take the average com-position of these rails which did not break, nor crush, nor wear out rapidly, and assume nor crush, nor wear out rapidly, and assume that carbon, 0.42; phosphorus, 0.079; silicon, 0.474, and manganese, 0.676 is the proper formula for rail steel. The average of Dr. Dudley's 32 samples of good-wearing rails was: Carbon, 0.334; phosphorus, 0.077; silicon, 0.06, and manganese, 0.491, a formula which, if it was right, Mr. Dudley should address to and which would be better should adhere to, and which would be better than the compromise formula recommended

by him, because sound steel could be made more easily under its provisions. With steel containing 0.10 phosphorus and not more than 0.35 manganese, the result-ing ingots would be very unsound, and the rail mill would produce an indefinite number of imperfect rails, many of which would get into service in deflance of the most careful inspection, the result being crushed ends, flat places, and generally unsatisfactory rails. If low manganess is desired, the phosphorus must also be low; c.10 cannot rails be so considered. In the 64 analyses there are but 16 with the manganese as low as 0 40 and under, and only 4 of these have the phosphorus above 0.085, 11 being under 0.07 and 6 under 0.05. The rails showing under 0.30 carbon, with the exception of 6, were made over 12 years ago; four of these six were made about 11 years ago, and of the other two, one rail 10 and the other 8

At the time all of these rails except the last were made, all steel was hammered. The blooming mill had not been invented. Under the hammer it is possible to coax steel into fair-appearing blooms that would either go to pieces or roll very badly in the blooming mill. When the latter was intro-duced the steel makers had only at their command recarburizers poor in manganese and high in phosphorus. Moreover, the American irons were then very much higher n phosphorus than the chemists returned. Hence a very great deal of very unsound steel was made. As high as 20 per cent steel was made. As high as 20 per cent. of second quality or defective rails was a common run of work, while to-day, with better irons, richer spiegels and better melting furnaces, roper cent. is rarely exceeded, and for days the works are run at less than one half of that figure. This is done on much more difficult sections than railroad engineers and probability of many chemists, the analyses of Dr. Dudler's case and the Dudler's classified results as find to accept Mr. Dudler's chemical results classified results as find to accept Mr. Dudler's chemical results classified to accept Mr. Dudler's chemical results as find to accept Mr. Dudler's chemical results as find on two grounds. He urged that they were "unfortunately deficient and deplorations, richer spiegels and better melting furnaces, to per cent. is rarely exceeded, and of the deficient and deploration of the deficient and deploration of the deplorati neers formerly required, and Dr. Dudley's Dudley's assistant could not be accepted as own data furnish indications of the influence finally correct, unless verified by chemists of of difference of section upon the wearing power. The necessity of giving the engineers a stiffer rail, in order to satisfy them, widely in their determinations of phosphoru

containing the least phosphorus. Put in enough carbon to make strong steel, and enough mangapese to make the steel roll sound, both while in the ingot and in the bloom. Carefully heat the ingots and resulting blooms; hot-straighten the rails, so as to leave the minimum of work for the cold press, and have it do its work while yet the steel is hot. The wear of the rails must prove that this practice is wrong. For must prove that this practice is wrong. For the tests a 4-inch ingot is cast from each blow; this is han mered into a ½-inch bur, which, when cold, is required to bend to at least a U by the blows of a sledge, this bending being a much severer test than the same performed in a press. The steel is also quenched in water and tested for tem-per. Drillings are taken from the ingot and accurate carbon determinations made. This plan is preferable to any test of the

This plan is preferable to any test of the rail ends. To be of the fullest value, such tests would have to be taken from both ends of the rail and from every rail, for one end might be overheated and the other not, and some blooms might be all right and the rest of the heat spoiled. In a mill producing, say, 9000 rails per week, 18,000 rail-end tests would be no inconsiderable item, perticularly if, as Dr. Dudley proposes, the test piece—12 inches long, 15 inches wide and 16 inch thick—is to be slotted from the web of the rail. He would have to give a lease of the Altoona shops along with the rail conbract.

As a matter of perhaps some interest, Mr. Hunt presented two pieces of Trey rails, cut off at the saws from two rails not in the same heat, and without knowing any particulars of their chemical composition. These pieces were separately placed upon 10-nch bearings, under a seven gross ton hammer. A piece of 2%-inch diameter from was laid upon them as a fuller and the hammer allowed to fall from 20 inches above the allowed to fall from 20 inches above the fuller, which, according to Haswell, gave a blow of 67.75 gross tons. The pieces were then turned over, the fuller placed upon the convex surface and the hammer allowed to fall from 13 inches above the fuller, giving a blow of 58.45 gross tons. These rails did not show any signs of rupture, and their color at the points of torture proves them to have been absolutely cold when the test was made. These rails ought to be reasonably safe in the track. A piece of the head of one of them was planed and some teeth were cut in it with a cold chisel, and over half of cut in it with a cold chisel, and over half of them pounded down with a hammer. The teeth of this rack did not break off. The analysis of these rails are :

Carbon.....

Mr. William Sellers argued that it was necessary to consider the fact that steel is now produced which contains much larger proportions of phosphorus than formerly, proportions of phosphorus than formerly, and that the degree of heat and the manipulation of the ingot also have an important bearing upon the question what shall be the tests which are to determine the quality to be obtained. He urged that the chemical composition has no value to the engineer, except so far as it affects the physical quality of the material he has to deal with. He must rely upon the physical qualities to determine whether it will answer his purpose. It should be his business to devise such physical tests as will determine absolutely whether or not the quality that he desires has been produced, while the he desires has been produced, while the manufacturer should be left free to make such chemical combinations as will fulfill the requirements of the engineer. As the most abundant physical data which enable the prediction of the quality are ultimate strength and ductility, the determination of the relation of the one to the other would be best for ascertaining the quality. Dr. Dudley's data, however, indicate that the relation between the ultimate strength and the ductility would be insufficient to deter-mine the wearing quality of rails, so that this data must be supplemented by some other, which Mr. Sellers suggested should be that of fatigue and shock. He pleaded in favor of the drop test, instead of the bending test by pressure, recommended by Dr. Dudley, by pressure, recommended by Dr. Dudley, because it was more analogous to the manner in which the rail was tested when in service. While the results obtained by the drop test may be more diverse, it was better, because it produced more uniform effects, which can be more accurately measured. Absolute certainty as to quality, in an engineering sense, would be attained by obtaining the relation of ductility to ultimate strength, together with the capacity to sustain fatigue from shock. The cost of a large number of tests for all those data, for the sake of establishing the quality of an ordinary order for steel rails, would be a seriordinary order for steel rails, would be a serieus item, while the delay would be considerable. It would seem sufficient, therefore, to adopt a system that would furnish indications as to quality, and of the two tests which would give these indications with great accuracy, without delay and expense, the registering punch and the drop test, the latter would be the best If, however, physical tests are to be supplemented by chemical analysis, the specification for this analysis should not be complete. A maximum limit should be fixed respectively for phosphorus, silicon and manganese only, leaving the carbon to be varied by the manufacturer, so that he may properly be required to fulfill the physical conditions. It was evident that if the engineer defined the chemical composi-tion he could not reasonably ask the manufacturer to guarantee that this composition

phosphorus. Moreover, the were then very much higher than the chemists returned great deal of very unsound. As high as 20 per cent. of

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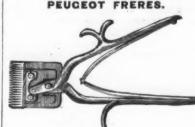


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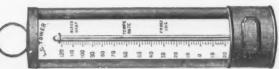




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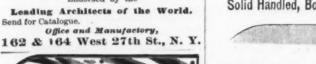
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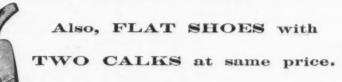
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Admitted by those who have used them to be the best thing made for fastening Wirs Fricz, being infinitely superior to the ordinary Staple, and is of the same weight. Driver into Hard Wood as well as into Cadar posts without crippling. Farmers give them a try! Railroads use your old ties for posts! We make a nail long enough to go into the Sound Wood. Ask your nearest dealer for them, or address the sole manufacturers.

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In the formation of the joint of this Hinge we have the strength of the whole width of the strap, instead of one-third, as in the ordinary Hinge. The leaves and rivets are wrought iron, and the malleable parts on the sides (all of which have been tested) form a brace when secured to the post, thus giving additional strength; and as strength in a Hinge, rather than length of iron, is the main object, the patent

Heavy Strap, of same length, but one-half inch narrower than the extra heavy.

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Made by HORACE F. SISE, New York.

per wheel were taken into account. These had been compared to rails classed as fastwearing rails which had been subjected to a much heavier wheel tonnage. He contended that it made a very great difference in the wearing of rails whether a given tonnage was distributed over a few or over many wheels, and that it would not do to class a rail which had done short service under a heavy wheel tonnage as bad because it showed greater wear, while another which had had the advantage of many years comparatively light wheel tonnage was put down as slow wearing. Mr. Jones expressed his preference for the drop tests advocated by Mr. Sandberg, but and 52-pound rail to a drop test of 1800 lbs. falling a distance of 14 feet, the distance between centers of support to be three feet; a 54 to 56-lb. rail to a 16-foot drop; a 56 to 58-lb. rail to an 18-foot drop, &c. He would adhere to the test bar, drawn out from the head of the rail down to one inch square, then placed under a steam hammer and bent through an angle of 110 degrees, the distance between centers of supports.

The low phosphorus units steel will have the most pipings, and, as a consequence, more of those black pits and thin fins so often terrifying to railway men during the first few months' use of the first lot of steel rails they purchase and put down.

The force developed in whatever forms the distance between centers of supports' in the distance between centers of supports' in the distance between centers of supports' in the distance between centers of supports to the most pipings, and, as a consequence, more of those black pits and thin fins so often terrifying to railway men during the first few months' use of the first lot of steel rails they purchase and put down. of honeycombs. They made bad blooms, elements that form the sum and he did not believe that they made good phorus units is to be blamed? rails. The rails are now in the track of the West Pennsylvania R. R., and "if they do prove to be good rails, the days of miracles are with us."

there was any difference between the analysis of the chemist and their own physical test they would go over the physical test and have another analysis made, and in that way usually found that the difference was caused by a factor for which the chemist had not been on the watch. In crucible steel he never found a case where a physical test and a chemical analysis varied, and he said that the same ought to be the case in Bessemer steel, and he believed it would be the case if Dr. Dudley's analyses had been complete; but in his opinion they were deplorably incomplete, as he ignored entirely sulphur and copper. He spoke at some length of the probably great influence of the nitrogen generally present in steel, and urged that more attention be paid to this subject. He held that it does unite with iron, and that its presence has a modifying action upon the physical properties of the metal, rendering it white and remarkably brittle.

In regard to the relations between chem. presence has a modifying action upon the physical properties of the metal, rendering it white and remarkably brittle.

It white and remarkably brittle.

In regard to the relations between chemical composition and physical properties, he stated that in the presence of phosphorus high carbon injured the quality very much, and in order to show the effect, quoted the analysis of various samples of English and American die steels. The best English steel contained is carbon, 2 8c, silicon of the phosphorus of contained: carbon, 2.89; silicon, 0.14; phosphorus, 0.02; sulphur, 0.031, and manganese, 0.26, and a good American steel: carbon 2.37 and maganese, 0.18. Of two American steels which were too soft, one contained:

which he stated that the credit of designing the first section for steel rails which was intelligently adapted to the material, was due to August, 1866, gave an order for 200 tons to them, who were then agents for Messrs. John Brown & Co., Sheffield. The latter first declined to roll these rails, owing to the thinness of the flange, but subsequently accepted the order.

Mr. William Metcalf the content of the bending weights, indicating the existence of a law that the bending weight is directly proportionate to the phosphorus units. By relaxing Dr. Dudley's specifications in regard to manganese, eight rails would be accepted, but of these five would be classed as faster-wearing rails

thinness of the flange, but subsequently accepted the order.

Mr. William Metcalf then read a paper entitled "Can the Magnetism of Iron and Steel be Used to Determine their Physical Properties?" The paper is full of valuable suggestions, but as its bearing upon the subject under discussion is somewhat remote, we shall take occasion to publish it some called for. we shall take occasion to publish it some other time.

worst of another set to prove that they were the worst wearing rails. Besides, no notice whatever had been taken in the tonnage calculations of the increased weight of cars and of locomotives and of increased speed. This increase, dating from 1874, subjected the rails to a duty which he believed to be fully 60 per cent. greater than that before the year 1874. In consequence of this, a large number of rails had been classed as good wearing rails that had been subjected to comparitively light duty, if the tonnage per wheel were taken into account. These large number of rails had been classed as lessues and causes a bad end to the rail good wearing rails that had been subjected to comparitively light duty, if the tomage per wheel were taken into account. These tables are compared to rails classed as fasting and causes a bad end to the rail of the phosphorus units of which are high, but it is a question whether mill managers and inspectors are careless in scrutnizing the

as bad because it showed greater wear, while another which had had the advantage of many years comparatively light wheel tonnage was put down as slow wearing.

Mr. Jones expressed his preference for the drop tests advocated by Mr. Sandberg, but modified as follows: He would subject a 50 and 52-pound rail to a drop test of 1800 lbs. falling a distance of the fact the distance.

The force developed in whatever forms these "pipings" is no small one, as may be the distance between centers of supports the supports being from 10 to 12 inches. He held that this was the most simple, thorough, effective and reliable test. Mr. Jones expressed serious doubts if steel made in accordance with Dr. Dudley's second formula would be of any value in showing a good record in the track, and stated that, in attempting to fill an order in accordance with it, ingots were obtained which were a conglomerate mass of honeycombs. They made had blooms cause of these pipings. But which of the elements that form the sum of the phos-

Mr. Webb went on to describe a method proposed for preventing the formation of pipproposed for preventing the formation of pipprove to be good rails, the days of miracles
are with us."

Mr. William Metcalf said that he could
not entirely agree with Dr. Dudley in his
deductions, and yet could not think he was
altogether wrong. In giving his experience
with analytical chemists, he said that where
there was any difference between the analysis
of the chemist and their own physical test.

tion at all to the chemical composition or to the physical tests. He undertook to prove that the difference in the wearing power of the 64 rails was not due to the differences in chemical composition, but to some other cause or combination of causes, a number of which he cited, but to none of which he was able to accord a leading influence. None of them, however, had been taken into account in Dr. Dudley's investigation. He held that if the railway companies desired to limit rail manufacturers to certain chemi-2.37 and maganese, 0.18. Of two American steels which were too soft, one contained: carbon, 1.7; silicon, 0.2; phosphorus, 0.02; sulphur, 0.09; maganese, 0.387, and tungsten, 0.78, while the other held, carbon, 1.86 and maganese, 0.566. He urged that when there was much phosphorus, silicon and maganese the lower the carbon was the better.

Another point which had been neglected, and of which he tried to trace evidences in Dr. Dudley's series of sections, was that of flow. It was mostly visible on the side opposite the flange, and he thought that flow and grinding ought to have been considered as causes of wearing. He discussed the question, which would flow most, soft or hard steel? On general principles, he thought that soft of wearing. He discussed the question, which would flow most, soft or hard steel! On general principles, he thought that soft rails would wear the best within certain limits. He had examined Dr. Dudley's sheets, taking the rails by pairs as they come from the track in the same place, and had compared their record with their chemistry. He had figured them out in every way, and in 30 cases he found a total of 12 in support of Dr. Dudley and 18 against him. small number of the very worst were left out of Dr. Dudley and 18 against him.

At the close of Mr. Metcalt's remarks the lateness of the hour necessitated a closing of the session. A motion to continue the discussion on the following day was carried, and in order to present to our readers a completed report of the discussion, we shall defer our summary of the work of the session of Thursday afternoon, when other matters came up, to a later issue, and continue with

The Fifth Session,

which was opened by the reading of a letter from Mr. Wm. R. Hart, of Naylor & Co., in which he stated that the credit of designing the results of Dr. Dudley's work, he had had found that there was a parallelism. had found that there was a parallelism between the lines of phosphorus units and

called for.

Dr. Drown, the secretary, then read a The secretary, Dr. T. M. Drown, then read a communication from Mr. George Webb, of the Cambria Steel Works, Johnstown, Pa., in which he referred, in a humortions, as the good and bad rails averaged nearly alike in his first series, and in his last the rails which wore best even showed more silicon than the bad ones. His chief argument, however, was directed against the introduction of manganese as an independent coefficient with a working formula. In 1875 he had advocated the use of the following formula for manganese:

Mn = 0.8 (C + ½ Si) + 4 P, which, applied to Dr. Dudley's limits, would yield 0.66 manganese instead of 0.35. If steel would have to be made according to Dr. Dudley's specifications they would have to return to the practice of hammering ingots, instead of rolling them in the blooming mill. He recommended the use of bending a 1-inch bar, cold, to 180 degrees, and to supplement it by a carbon test. Using iron low in phosphorus, the silicon and manganese should be left to regulate themselves.

This was followed by a communication by Mr. F. G. Field, of London, England, which referred to subjects contained in Mr. Sandberg's paper, and by a letter from R. H. Sayre, of Bethlehem, in which the writer arged the necessity of arriving at some standard sections of steel rails and forms of

Dr. T. Egleston, after making some re marks in defense of the chemists who had been so rudely assailed during the discus-sion, argued that is appeared to him that the investigation into the wear of steel rails had been conducted on a wrong basis. All that could be done by the chemist had been done, and it was time that the physical questions at issue should be given more prominence. He referred particularly to the effect of bubbles in steel, to flow and to the fatigue of metals.

Mr. Cloud, of Altoona, stated that investigations now being conducted at the repair shops of the Pennsylvania Railroad in regard to the wear of steel tires, corroborated fully the conclusion arrived at, in the case of steel rails, that a softer metal would give better wear. They had taken two tires from the same driving axle, the difference in wear between which amounted in some cases to as much as 1.5 to 2 inches. In all such cases they had found that the hardest, as indicated when in the turning lathe, was invariably the smaller one.

Mr. Shinn rose to call attention to the fact that the evidence of resistance of certain grades of steel to vibratory shocks cor-roborated that, but did not conclude his remarks owing to an interruption. Dr. Egleston and Mr. Jacob Reese made some remarks, and Mr. Moses, of Menlo Park, Dr. referring to some experiments made in connection with the Edison Electric Light, brought forward the question whether the element carbon as known to the chemists was really as simple a body as they appeared inclined to think. His views were challenged by Prof. Koenig, of Philadelphia, and others, and the discussion threatened to drift far away from the subject, when the presi-dent called upon Mr. S. A. Ford, who spoke briefly, followed by Mr. Stafford.

Dr. C. B. Dudley then rose. We give be-low his remarks in full, as revised by him, but would add that the changes made have only extended to modifications in the word-ing and to some alterations in the phrases:

In rising to close this interesting discussion, I want, in the first place, to thank every one who has contributed to it for their full and open criticism. The work which has been done on steel rails, and which has been discussed here during these two days, was not done to establish any pet theories, nor to make out that any person was great, nor any person small, but with a sincere desire to any person small, but with a sincere desire to get at what is the truth in regard to the wearing power of steel rails. There are enormous commercial considerations in wearing power of steel rails. There mormous commercial considerations volved in this question, and, as I look at the matter, the more honest criticism and fair discussion there is, the more likely it is that the truth will appear. And, so, as I look of supreme satisfaction have regarded its main question—that the said before, I thank you all for your criticism. I have made a few notes during the discussion, and, while I shall not be able to take up every point, I will try and most

And first, with regard to chemists and chemical work, there has been considerable said tending to throw discredit on chemists and their work; and while I believe that there have been in the past, and may be in the future, a good many poor chemical analyses made, I also believe that chemists are, as a rule, as honest and competent as gentlemen who belong to other professions.

I metal and the carbon, phosphorus, silica or manganese, or phosphorus units in this series of rails, affirms that I have not solved the whole year, and, ergo, the softer rails do not give the better wear. I beg to unsettled must be presented to the commis solved the problem of wear; I expressly say I have not solved it, but I do not see how that affects the main question, nor do I see, because there is no divert relation between the United States and Spain for the settlement of claims by citizens of the whole year, and counter the settlement of claims by citizens of the settlement of claims by citizens of the united States, on account of damages suffered in Cuba, all claims still remaining unsettled must be presented to the commis solved the problem of wear: I expressly say I have not solved it, but I do not see how that affects the main question, nor do I see, because there is no divert relation between the United States and Spain for the settlement of claims by citizens of the United States, on account of damages suffered in Cuba, all claims still remaining unsettled must be presented to the commis solved the Justice of the settlement of claims by citizens of the United States, on account of damages suffered in Cuba, all claims still remaining unsettled must be presented to the settlement of claims by citizens of the States and Spain for the settlement of claims by citizens of the States and Spain for the settlement of claims by citizens of the States and Spain for the settlement of claims by citizens of the United States and Spain for the settlement of claims by citizens of the United States and Spain for the settlement of claims by ci ntlemen who belong to other professions. There are chemists who are chemists, and chemists who are not chemists. The determination of manganese has been called in question. Now, I think the chemist at what chemical composition and what physialmost every steel works in the country will cal properties are, in general, characteristic of those rails which have given best service. tell you that, in his experience, the man-gamese differs in different parts of the same ingot. Mr. T. Morrell, chemist of the Cambria Iron Company, whom I believe to be a thoroughly competent and honest chemist, tells me that he has often found different amounts of manganese in different parts of the same ingot. Come with me to ona, and I will take you into the machine shop where steel is being cut and shaped, and I will show you that it is often neces-sary to stop the lathe or planer and take a chisel and cut out a hard spot, or else run the risk of breaking the tool. This hard spot is simply a part of the spiegel which is not thoroughly mixed with the mass when the steel is made. In the rapid methods by which steel is at present manufactured, time enough is not allowed for the spiegel to become uniformly mixed. What wonder, then, that chemists find different amounts of manidates of the series of th ganese in what is supposed to be, but is not, the same steel. Indeed, I believe it is possible for borings from one borehole in the same ingot to be given to
two chemists and to have them find
different amounts of manganese, and yet
both analyses be correct. And, so, I say to
flow, whatever there is of it, must be away both analyses be correct. And, so, I say to flow, whatever there is of it, must be away you steel makers, "Make uniform steel, and from the forces which produce it. Now, we, as chemists, will tell you what there is both the pressure of the flange against the

With regard to the determinations of man-ganese in the series of rails we are discuss-ing, I would say, I wish Mr. Wells was here, that you might see him for yourselves.

heartily recommend him. He had had two years' experience since his graduation, and, says Prof. Allen, "I regard him as the best analytical chemist that has graduated under And I may add that both Prof. Drown and myself graduated under Prof. Allen

Still further, it is simply impossible that any errors, either in the chemical analyses or the physical tests, should have had any influence in establishing the point that the softer steel gives the better wear. This follows from the way in which the work was done. First the physical tests were made, then the analyses, then the tonnage was computed, and finally the loss of metal was determined. So that we knew nothing how it would turn out with any rail until all the chemical analyses and physical tests were made. Furthermore, some of the rails that were selected as faster wearing rails, when we came to get the rate of wear, were found to be slower wearing rails. So that no previous bias of mind, or, as it seems to me, no possible errors in the work could influence the result.

Again, with regard to sulphur and cop er, it is said that these are of vital impor per, it is said that these are of vital impor-tance, and should have been determined. In answer to this I would say: Where is the man that can affirm, and back his statement by any analyses, that sulphur and copper have any influence on the wearing power of steel? I do not say that these elements do not have an influence on wear, but when this investigation was started the best information that I could get was that sulphur and copper were of vastly more importance to the steel manufacturers than they were to the consumer. And so I say that I believe the sulphur and impertance to you, copper are of of not so much importance to one study-ing the wearing power of steel. If you want to know the sulphur and copper in these rails you may determine them. Probably no one has thought over the question why some of the rails in this series seem to be exceptions to the general law more than I have. But this suggestion in regard to sulphur and copper and other undetermined substances, especially, in my judgment, ox-ide of iron, furnishes a possible solution of the problem. If we know every foreign substance which these rails contain, I doubt not but that some of the anomalies would be explained. And I would here like to ask chemists who have time to devote to such studies, to give us a method for determining oxide of iron in steel.

Another point made was the influence of heavier locomotives and cars on the wear of rails. If I understand this criticism it is this: Your slower wearing rails had lighter this: Your slower wearing rails had lighter wheel tonnage for at least a portion of their life—the earlier portion—while your faster wearing rails have had almost altogether heavier wheel tonnage. In reply, I say the slower wearing rails had during the latter part of their life the same heavier wheel tonnage that the faster wearing had. tonnage that the faster wearing had. All the rails were taken out of the track at the same time, and, consequently, so far as I can see, the comparison of the wearing power

of steel with its quality is strictly a fair one. Again, in the course of this discussion— not a few times—the exceptional cases, the cases when individual rails did not conform to the general law, have been taken out and held up prominently before us, as though these individual and exceptional cases were the only thing we should consider. Now, I submit to you that this is simply trying to event here. overthrow a law by the exceptions to it, or, in other words, to pullify the teachings of a large number of samples by the teachings of

take up every point, I will try and meet that there is a direct relation between loss of some of the objections that have been raised.

And first, with regard to chemists and manganese, or phosphorus units in this series because there is no direct relation between carbon and loss of metal, that it is impossible for me to take a series of rails which have This I claim to have done, and the conclusion seems to me so plain that he who runs may read, viz., that the softer rails give the better wear. With regard to Mr. Metcalf and his explanations of all the troubles with steel being due to nitrogen. I think it may fairly be said—first, that Mr. Metcalf brings no proof to show that nitrogen is the bane of steel, and, second, if it was, the natural conclusion would be that no steel could be made except by the crucible process, which would undoubtedly be a satisfactory conclusion for crucible steel makers, like Mr. Metcalf, but would hardly satisfy the stockholder of the Bessemer works, nor very likely stop their making steel with nitrogen rail and the coning of the wheels would cause the metal to flow away from the flanges instead of toward them, and consequently I do not see how you are going to get metal there for the flange to rub off. The

It is not worn off, and the question we are studying is loss of metal by wear.

One or two points further and I am don

It has been said, "You have not exhausted the question yet. More study must be put upon it." No one is more conscious of the truth of these statements than I. I do not pretend to now exhaust the question. I wish there were fifty workers in this field. But I believe that the results that we are discussing are the best information that we now have upon the question as to the relation between the wearing power of steel and its chemistry and physics. I would not at all affirm that this will be the best information on the subject five years from now. But I think that no man does his life-work but who lives up to all the light that he has in his own time. And so I ask you to utilize this work, to act upon it, and guide your practice by it until something better is obtained.

Finally, I have been accused of trying to teach the steel makers how to make steel, and it is to be supposed that they know already much more about that point than I Now, if any one thinks that such has been my aim, or has ever been in my thoughts, he has certainly misunderstood me. What I am striving for is to tell the steel makers what we want, not how to make it. This whole question of the fitness make it. This whole question of the fitness of material for the purposes for which it is intended to use it, is in its infancy. We are doing something toward studying it at Altoona. The principle which governs us, then, is that the kind of service that is to be required of the metal must determine what kind of metal shall be used. Because softer steel gives better rails, we do not think softer steel will give better crank pins. In crank pins we require stiffness, which comes with harder steel. But in rails, in tires, in with harder steel. But in rails, in tires, in bridge rods and in boiler plate we are, so far as our knowledge now goes, inclined toward soft steel. And all the information which we have thus far been able to accu mulate in regard to these kinds of service confirms our position and justifies our con

clusion.

And now, how can the best results be obtained in trying to decide upon the quality of material best fitted for any kind of service? I do not see that the steel makers can study this question alone, for after the steel leaves their hands they know very little about its behavior. It does not come under their personal observation and study. It seems to me, therefore, that the question can only be studied by both the consumer and the producer working together. I cannot but regard that the interests of the consumer and the preducer in this matter are onethat neither can solve the question aloneand so I ask you to work with me rather than oppose me, to utilize the information that is gained so far as it is gained, and to constantly hold in mind the material de-pendence of both producer and consumer upon each other.

(To be continued.)

A St. Louis paper notices the arrival in that city of a steel shaft, forged by the Nashua Iron and Steel Company for a new towboat building in that city, its weight being 18,000 pounds and its length 34 feet. A Pittsburgh paper describes two shafts of more formidable dimensions, built by Krupp, in Germany, for Ohio river boats. weighs 20,600 pounds, and the other, larger, built for the towboat Joseph B. Wilson, is 36 feet 7 inches long, turns 13½ in the journals, and is 15 inches in the middle.

In return for the \$6,250,000 worth of the products of the Argentine Republic, pur-chased by the United States, it might be chased by the United States, it might be supposed that they would supply themselves largely from this country with machinery, hardware and other manufactures of ores. But the United States consul shows that of their purchases of hardware in 1879, amounting to \$1,768,043, only \$120,537 came from the United States.

By an additional article to the agreement between the United States and Spain for the settlement of claims by citizens of the

Employers' Liability Act has been a strange one. A Board School master accidentally dropped his pen from the desk and thereby injured an eye of one of the scholars, so that he eventually lost the sight of that eye. The parents obtained a decision of £100 damages against the School Board, as responsible for the accidental damage done by its servant.

The Atlanta Chambers of Commerce have received such assurances from the North respecting the proposed International Cotton Exposition in that city, that the success of the enterprise is now considered beyond a doubt. Implements and machinery of all sorts used in the culture or manufacture of about 75 or 100 men residing in the vicinity cotton come within the scope of the Exposi- of the town.

Judge Choate has given his decision in the case of the Long Island North Shore Passenger and Freight Company, owners of the burned steamer Seawanhaka, who petitioned to have a trustee appointed to determine struck at a depth of 280 feet. rails anyway. And so I asked Mr. Metcalf tion among the claimants. The decision is how the flow influenced the loss of metal by raised.

> Two of the prize palace cars for the Van-dalia Line between St. Louis and New York, ordered at the works in Detroit, have completed, and are described as the most finished in gold and natural woods.

When I began this work, I wrote to my old instructor in chemistry, Prof. O. D. Allen, of the Sheffield Scientific School, to recommend me some one to help me. He replied that if Mr. Wells would come he could by reason of flow, yet the metal is there.

I metal there for the flange to rub off. The flow must be in the other direction, or away from the flanges. And although a few of the Aztecs all over the country, were recently discovered in the Silver Belt Mine, having a little metal pushed off out of place by reason of flow, yet the metal is there.

I metal there for the flange to rub off. The flow must be in the other direction, or away from the flanges. And although a few of the Aztecs all over the country, were recently discovered in the Silver Belt Mine, having a little metal pushed off out of place by reason of flow, yet the metal is there.

I metal there for the flange to rub off. The flow must be in the other direction, or away from the flanges are found in the Aztecs all over the country, were recently discovered in the Silver Belt Mine, having a little metal pushed off out of place by reason of flow, yet the metal is there.

I metal there for the flange to rub off. The flow must be in the other direction, or away from the flange to rub off.

The Monocacy Iron Company, at monocacy, is prospecting for ore near the Falls of the Aztecs all over the country, were recently discovered in the Silver Belt Mine, Arizona, showing that the mine had been by reason of flow, yet the metal is there.

I metal there for the flange to rub off.

The Monocacy Iron Company, at monocacy iron

INDUSTRIAL ITEMS.

CONNECTICUT.

The Winchester Armory, of New Haven, has received an order from the Turkish government for 50,000,000 cartridges. Work will begin as soon as satisfactory security is given.

MASSACHUSETTS.

James Minter, of Lowell, has bought a lot of land on Union street, Worcester, and will erect a machine shop 100 x 45 feet as soon as

the weather will permit.

Charles S. Shattuck has bought mill property at Hatfield for \$3000, and will at once egin the work of rebuilding his pistol shop. He will locate in the mean time in B. Couch's shop at Florence. Outside parties have done much to induce Mr. Shattuck to relocate in Hatfield, and the result gives general satisfaction in the town

A new 80 horse-power engine has recently been placed in the Mount Washington Glass Works at New Bedford, and a third boiler has been purchased, as the old ones were incapable of furnishing sufficient power. The Richmond Iron Works have bought several hundred cords of wood, delivered on

the Boston and Albany Railroad Company's lot, where it will be burned into coal the coming summer and shipped to their furnace at Richmond.

The Belcher & Taylor Agricultural Tool

Company, at Chicopee Falls, will begin preparations at once for the erection of a build-

ing 50 x 25 feet in size.

There is talk of working Sayles' emery mine at Adams, and it is said that a company with \$12,000 capital will begin operations in the spring.

J. W. Gardner expects to occupy his new

NEW YORK.

The Holly Manufacturing Company, of Leckport, has completed two upright compound condensing pumping engines for the city of Evansville, Ind., of 4,000,000 gallons

each, daily capacity.

The rail mill of the Rome Iron Works, at Rome, has been refitted and will soon begin work rolling rails from steel blooms.

The Duplex Safety Boiler Company are now erecting two of their 100-horse-power boilers for the Ansonia Clock Company, in Brooklyn, also a 100-horse-power for the Terra Cotta Company, of Perth Amboy,

PENNSYLVANIA.

During the recent great fire in Philadelphia, the Keystone Portable Forge Company were burned out, losing their entire stock, saving only their books and papers. They have now secured permanent and more con venient premises at 208 North Fourth street, and announce their ability to meet the demand for forges with their former prompt-

Borgner & O'Brien, manufacturers of firebrick, tile and clay retorts for heating and melting furnaces of every description, report business in a flourishing condition, report business in a flourishing condition, their trade both home and foreign being constantly on the increase. The firm has been in existence 22 years, and both partners are men of practical experience.

The Wren patent grate bar, manufactured by David S. Cresswell, Philadelphia, has been introduced into 126 furnaces at the works of the Atlantic Refining Company.

works of the Atlantic Refining Company. Orders have recently been received from large mills in Rhode Island, and from sev-

eral Western States.
Wickersham & Co., Philadelphia, manufacturers of mill and machinists' supplies, report business unusually active. The steam packing manufactured at their establishment on Branch street has been a success from the start, and they are constantly

crowded with orders.
Philadelphia dispatches, under date of Feb 25th, say: The Executive Committee of the Lehigh and Schuylkill coal exchanges met this afternoon. It was decided to make no change in the current circular prices of coal for the month of March. As the stock of coal on hand is low, it is thought that full production will continue throught that rull production will continue throughout the coming month. Navigation is expected to open March 5 on the Schuylkill Canal, and the spring schedule of Eastern prices may show a small decline.

Hon. J. H. Boone's rolling mill, at Norris-The first decision for damages under the imployers' Liability Act has been a strange in e. A Board School master accidentally ropped his pen from the desk and thereby plured an eye of one of the scholars, so that in the sight of that eye. The

able properties in the Schuylkill Valley. The Reading coal tonnage for the ending at noon on Saturday was \$140,172 tons 10 cwt., as against 75,030 tons 17 cwt. for the corresponding week of last year. The total shipment for the year to date is 1,386,613 tons 12 cwt., a decrease of 27,619 tons 19 cwt, from the same period of 1880.

The Blair Iron and Coal Company are at present prospecting for mineral on a piece of land recently purchased from Judge Irwin. The drill struck an 8-inch vein of fossil iron ore at a depth of 270 feet, and in present prospecting for mineral on a

the liabilities of the company and to limit them to the value of the wreck for distribution among the claimants. The decision is in favor of the company on all the points raised.

The Phenix Iron Company, at Phenix-ville, are changing the 12-inch rolls in their new mill to 13 inches. The company have also placed in their merchant mill a new arrangement for rolling small merchant bars. Instead of having a man to guide the iron with a pair of tongs after passing through the rolls, they have automatic guides, which

The furnace in Gaysport, known as " furnace No. I" made last week 299 tons of No. I Bessemer iron, using one-half native and one-half foreign hematite ores. This is the largest run-out of metal ever made by a furnace in this country.

A new iron mill is to be erected at Potts-

town, near the Warwick Blast Furnace. The late managers of the Hoop Iron Company are among the projectors. It is also rumored that a new nail mill will be built at Glasgow, a short distance from Pottstown, and a pipe works attached to the works of the Pottstown Iron Company. From present appearances Pottstown is destined to become, at no distant day, an extensive iron manufacturing town.

The East Penn Furnace, at Lyons Station,

the engine house and hoisting apparatus of which were recently destroyed by fire, have chilled, and the employees have been temporarily thrown out of work. It will be ome time before the furnace can resume perations.

Four hundred and fourteen and one-half tons of pig iron were manufactured at the furnace of the Warwick Iron Company for

the week ending Saturday, February 19.
J. Sharpless Worth, of the Coatesville Iron Company, is about to build a new rolling mill at that place. The machinery is being made by C. Ridgway & Sons, at the Coatesville foundry and machine shops.

The repairs at the Emais Furnace are

progressing rapidly, and it will soon be ready to make iron. Ground will be broken this week' on

North Third street, Reading, near the Lebanon Valley bridge, for the new stove werks.

Spawn & Dennison, manufacturers of fire pocket-cutlery mill at Shelbourne Falls about the 1st of April. It has been built in a very thorough and substantial manner. employ 25 men if they had the room. Work will soon be commenced on their new building, which will be erected on a lot now owned by John McKnight, situated about half a square wat of Figure street was owned by John McKnight, situated about half a square west of River street, near Buttonwood. It will be built in the shape of an F. The main building will be 100 feet long and 25 feet wide. The larger feet long and 25 feet wide. The larger wing will be 75 x 25 feet in size, and the smaller 50 feet long and 35 feet wide.—

Reading Eagle.
The Laclede Fire Brick Manufacturing Company, of St. Louis, are furnishing the Cambria Iron Company, of Johnstown, Pa., with pure silica bricks for their Pernot fur-

PITTSBURGH AND VICINITY.

Mackintosh, Hemphill & Co. are very busy, having on hand the construction of a new blooming mill, hot-bloom shear and a hydraulic crane, for the Edgar Thomson Steel Co., Limited; the engines, shear, blooming mill, hammer and converter for the Colorado Steel Works, and the rail train and engine for the Pittsburgh Bessemer Steel Company. The Pittsburgh Bessemer Steel Company

made a very successful trial of their engines and machinery last week.

VIRGINIA.

The James River Rolling Mill Company, at Lynchburg, have completed arrangements to start their puddle department double turn. They pay puddlers Richmond prices—\$4.50 per ton. OHIO.

The Canton Spring Works, Canton, employ 75 men, and are running full time. The company anticipate an active trade in the spring.

Monitor Furnace will blow out this week,

naving exhausted stock in hand. The Hocking Valley Pipe Company propose to erect extensive works in Columbus at an early day. There is also talk of large malleable iron works in Columbus on a capital of \$100,000, furnished by outside

The new rolling mill at Hazleton is ready

The new rolling mill at Hazleton is reasy for the machinery.

A company is being organized to erect a blast furnace at East Ironton.

At the Grasshopper Mill of Wick, Arms & Co., at Youngstown, the rivet, bolt and spike machines are being run extra time in order to fill orders coming in.

The New York and Ohio Iron and Steel Co.'s blast furnace "Maggie," blew in Tuesday. The annealing furnace was being received Monday and the sheet mill was

day. The annealing furnace was being repaired Monday and the sheet mill was ped that day. About all the iron "Mag-had on hand when she banked has been sold. They started again Tuesday evening, having been banked since January 2. Mr. Bramwell has brought here several of his former Quinnemont laborers for fillers. Quite a large amount of iron has left this place for points below during the past week principally, Alice, Maggie and Hecla.—Iron-ton Register.

Owing to short supply of coal, the Burgess Iron and Steel Works, Portsmouth, are running their boiling department only one-third time. At the Portsmouth Steel and Iron Company's Works the same cause has led to a similar shortening of time in the bar mill, but the boiling department is running double turn with a reduced number of furaces. The plate mill is also on double.

Buckhorn Furnace is making on an average

15 tons of good warm-blast car-wheel iron per day. Never in its history has this furnace done so well. The increased yield is due to many small changes and improvements The city of Hamilton for a number of years

in the past, and up to the financial troubles of a few years ago, was one of the leading manufacturing towns of the West, but during the dark days and years following the panic of 1873, some of its business firms failed and others dissolved or went into cheaper quarters, and others awaited signs of revival in trade until, becoming discour-Two of the prize palace cars for the Vanalia Line between St. Louis and New York,
rdered at the works in Detroit, have been
completed, and are described as the most
agnificent specimens of "railway archibecture" yet built in this country. They are
resched in gold and natural woods.

with a pair of the rolls, they have automatic guides, which
hold the iron without the use of manual
labor. This is a great improvement over
the dol plan, and one which will cheapen the
manufacture of the iron. Arrangements
are being made to change one of their trains
of rolls in the new mill from 18 to 20 inches,

of rolls in the new mill from 18 to 20 inches,

Capitalists have invested in new

DE-OXYDIZED BRONZE.

DE-OXYDIZED BRONZE (patented) is an alloy of **LAKE COPPER** and best **ASIATIC TIN** in any proportion required, so as to be either as ductile as copper, as tough as iron, or as hard as steel, according to the proportion of Copper and Tin used.

The process of making the alloy is what constitutes its superiority over any other known alloy of Copper and Tin or any other Bronze composition. The castings made from this metal, owing to its perfect fluidity when melted, possess great density, perfect soundness and homogeneity. Unlike certain bronze and other compositions, it can be handled without the least difficulty by any ordinary founder, as it flows like oil in pouring.

Thus the necessity and trouble of shipping patterns, the delay in receiving castings and the expense of the double charges of freight or express, such as attend the obtaining, in many cases, of Phosphor Bronze, are entirely avoided by ordering D. O. B. in ingots. Where this metal has superseded other compositions of similar character, it has endured three times as long. In a word, we claim that De-Oxydized Bronze not only has none of the objectionable features attributed to similar compositions, but that it possesses all their good qualities in addition to its own merits, and advantages peculiar to itself, such as the following summary will make clear:

- 1. ITS CREAT CONVENIENCE IN HANDLING as compared to Phosphor Bronze.
- 2. We claim for it SUPERIOR ANTI-FRICTION QUALITIES to any other known Brass or Bronze.
- 3. CREAT MALLEABILITY AND TENACITY.
- 4. Its homogeneousness and smoothness of surface render it capable of the HICHEST POLISH.
- 5. As before mentioned, we claim for it UNEQUALED ENDURANCE.
- 6. We claim that JOURNALS MADE of D. O. B. REQUIRE ONE-FOURTH LESS LUBRICAT-INC MATERIAL than any other composition yet known.

Finally, this metal has never failed to give more than satisfaction wherever used. To sustain our statements, the following testimonials will suffice:

Henry Dissten & Sons, Saw, Tool, Steel and File Works, Front and Laurel Streets, you continue to make it the same quality, we shall use no other metal in our Engine Boxes. We therefore take pleasure in recommending it to Engine Builders in general.

Philadelphia Smelting Company, City:

Philadelphia Smelting Company, City:

Philadelphia Smelting Company, City:

Philadelphia Smelting Company, City:

GENTLEMEN: After a trial of eighteen months of your "DE-OXYDIZED BRONZE" as Journal Boxes in our Rolling Mill, where great pressure is required, we take pleasure in recommending it as being superior to any we have heretofore used. Very truly,

Defice of Eagle Iron Works, 1162 North Third Street,

Philadelphia Smelting Company.

Philadelphia Smelting Company:

To coaches. One marked peculiarity of this metal, when highly finished, is non-liability to abrasion, and is non-affinity with the gases of the atmosphere, which in embossed work is a great desideratum. To those willing to pay more in the first cost, we would confidently recommend "De-Oxydized Bronze" Trimmings as cheaper in the end.

Yours very truly,

J. HALL DOW, President.

This metal is used for the following purposes, and we can refer to large concerns in addition to above, through the New England and Middle and Western States, who are using it in preference to any other.

1. Engine, Car and Machinery Journals.

2. Pumps, Valves and Linings, Cylinders, Pinions, Cogs, Plungers, Crank Pins, &c.

3. Car Trimmings, Harness and Coach Furniture, House Hardware, Steam Fittings, &c.

Yours respectively,
Office of Union Brass Manufacturing Company,
CHICAGO, Dec. 23, 1880.

4. Wire, Sheets, Rods and Tubes.

And for any other purpose that a handsome, durable and sound Bronze is required. We especially commend it to Railroad Companies, Car Builders, Machinists, Engineers and others requiring a Journal Metal that will stand the severest friction and the heaviest pressure. Manufactured and for sale in Ingots and Castings by the

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Our Genuine Babbitt is superior to all other makes in the market in every particular. We guarantee it to be perfect in its Anti-friction qualities in machinery AT A SPEED OF 10,000 PER MINUTE, or at 1000 TONS PRESSURE for 10 YEARS. We append below testimonials from A1 houses justifying us in the above claims.

From J. L. Marsden, Supt., Blake Crusher Co., New Haven, Conn., and Farrell Foundry and Machine Co., Ansonia, Conn.

From Witherby, Rugg & Richardson, Worcester, Mass.,

August 17, 1880.

The "Genuine Babbitt" we have bought from you gives perfect satisfaction in our Stone Breakers. We have it working in bearings 12 in. long and 5 in. diameter. One-half the revolution of shaft there is a pressure of 900 to 18. The other half 2½ tons. The shaft makes from 200 to 250 turns per minute. I think this is a very severe test, yet they have been running for more than one year.

Manufacturers of Wood Working Machinery.

Send us 1000 pounds "Genuine Babbitt" divided into Bars as usual. We think the continuance of our trade with you in the face of the constant effort made by other parties to divert our patronage, is a sufficient recommendation of your goods. We speed some journals as high as 6000.

Yours truly, WITHERBY, RUGG & RICHARDSON.

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Letter B, Guaranteed at a speed of 1000. Letter E, Used for Ag'l Implements, &c.

Letter C, Guaranteed at a speed of 800. Letter A L, For slow speed.

Letter D, Used for Shafting. All our Metals are made from best Lake Copper, Asiatic Tin, Cookson's Antimony and best Refined Lead, and in all cases run free at melting heat, without drossing, and without any necessity for heating the journals into which they are poured.

MANUFACTURERS' AND MACHINISTS' NAME PLATES, REAL BRONZE, FINISHED.

Patterns from \$3 upwards, according to Size and Style. Plates, \$3 per dozen and upward, according to Size and Style. SKETCHES FURNISHED FOR APPROVAL BEFORE MAKING PATTERNS. We have a specialty in this line and produce a handsomer plate, at less money, than can be obtained elsewhere.

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Rope Halters, Horse Ties, Cattle Ties, Halter Leads, &c., made by clamping the lap with steel rings, as shown in cut Also, clamping the end with a ring to prevent unbraiding.

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COVERT'S HORSE AND MULE JEWELRY.



consisting of Covert's Celebrated Harness Snaps, Swivel Snaps, Open Eye Bit and Chain Snaps, Stand Thimble for Horse and Cattle Ties, Rope Goods, consisting of Horse Ties, Cattle Ties and Heleads, Leather Horse Ties, Breast Chains, Halter Chains, Martingale Chains, Rein Chains, Post Choot Rods, &c. These goods are far superior to anything of the kind on the market. They have feal merit become standard, and never fail to give entire satisfaction. They are sold by all leading ers in general and saddiery hardware at manufacturers' prices. Send for illustrated catalogue size list, Address COVERT MFC. CO. Sole Manufacturers, West Troy, N. Y.

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ANTIQUE PATTERN



Full size cut.

We have issued, under date of June 10, a complete revised Price List, a copy of which, with our liberated Cavalogue, will be furnished to the trade free on application. Said Catalogue contains strations and descriptions of over 1000 different varieties of Door Locks, Knobs and Escutcheons. MANUFACTORY AND OFFICE

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WENTWORTH'S NOISELESS SAW VISE ushion or Muffler between the Jaws, which prevents vibration and

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and the very reduced estimates for complete outfits.

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Outfits complete, with Dynamo-Electric Machine Tanks, Anodes, Solution, &c., &c., \$250.

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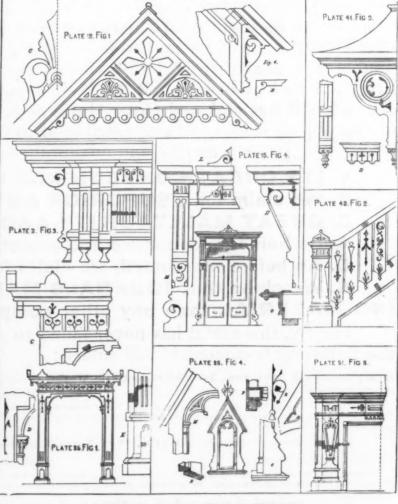
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Of the Various Parts needed in the Construction of Buildings, Public and Private, both for the City and Country; also Plans and Elevations of Houses, Stores, Cottages, and other Buildings.

By M. F. CUMMINGS, M. A, Architect.

Associate Author of "Architecture, by Cummings & Miller.

(CUTS REDUCED FROM PLATES INDICATED.)



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THE WORLD'S BEST



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No. 1, Solid Steel, Plain Handle... ... per gross, \$12.00 | No. 3, Solid Steel, Rosewood Hdle, per gro., \$36.00 No. 2, Solid Steel, Plain Handle... Liberal discount to the trade.

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THE UNION DOOR AND GATE —SPRING.—

The most practical, durable, econom-It is the only Spring with head seary. It is impossible for the Spring most objectionable feature of other to secure the tension, is in this nfacture four sizes, coppered day we will be able to fill which are the only adjustnow made.

ical, and best Spring made. curely connected and stationto slip from the head. The Springs, the extreme difficulty entirely avoided. We manor japanned. At an early orders for our Spring Hinges, able and low priced Hinges Quotations cheerfully furnished by

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Sweet's Manufacturing Co.'s Steel Toe Calks and Calking Steel of Superior Quality.

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Also for JOHN BAYLISS' Celebrated

Works, of Springfield, capital stock \$50,000; incorporators, A. L. Ide, George M. Brinkerhoff, George Parsfield, and C. W. Post. Also the Streator Bottle Works, capital stock \$20,000; incorporators, W. L. Smith, George M. Cash and James M. Wilson.

THE "BOSS" SCYTHE RIFLE.

Warranted not to scale or glaze. Imperviou ious to water, and not affected by heat. It is the best Rifle now LEVI L. BROOKS, Manufacturer, Millbrook, N. Y. BROWER & LEEDS, Sole Agents, S1 Murray Street, New York.

(Continued from page 18.) INDUSTRIAL ITEMS.

оню.

Olive Furnace, which blew out on the 12th, will start again in about six or eight weeks. Owing to bad weather, preventing the digging of ore, the stocks would not meet.

The Akron Iron Company will soon break ground at Buchtel for another new stack by

their Bessemer furnaces.—Trade Review.
The Cincinnati Corrugating Company have issued an interesting illustrated circular, showing some new and superior forms of corrugated roofing and siding, which have no little value in the leading trades. Their curved corrugated roofing plates are particularly read. ularly good.

ularly good.

Hoonen, Owens, Reutschler & Co. are the proprietors of a new manufacturing establishment which will go into operation at Hamilton, to be called "The Monarch & Eclipse Machine Co." This company has ample capital, and has purchased the extensive property formerly owned by Owens, Lane & Dyer, manufacturers of heavy and light machinery. This property includes about a square on both sides of the street, one of which sides is covered by the capaabout a square on both sides of the street, one of which sides is covered by the capacious building, which a few years ago were humming with machinery in the manufacture of engines, saw mill machinery, &c. The establishment will probably employ all the space included in the block of buildings mentioned.

The Ohio Iron Works, Sohn & Reutschler proprietors, at Hamilton, are chiefly devoted to the manufacture of light gray castings, shelf hardware and light machinery. Over \$40,000 worth of light castings are shipped annually to Indianapolis firms from this es-tablishment, besides a very heavy trade with Chicago and other Western points. In these works the castings for the Martin patent casters are cast and finished, plated patent casters are cast and mished, plated and mounted ready for shipment, and the production of this article forms a very important item, as many tons of them are annually produced. Messrs. Sohn & Routschler have purchased an interest in a new manufacturing establishment at Hamilton, which will add largely to their operations in the near future. The new works are to be of near future. The new works are to be of very large dimensions, and devoted to vari-ous articles of machinery—portable and stationary engines and grain separators being the leading articles of production. The regular weekly meeting of the Cincin-

nati Exposition Commissioners was held on the 16th of February, and it was then de cided to have an exposition this year. At the meeting a communication from Mr. W. A. Guin, cf Fort Collins, Col., was read, asking for space for a collection of over 700 mineral specimens from the mines of Colo-rado, Nevada and Montana, embracing amethysts, jaspers, topaz, sgates, &c., and also a number of fine metallic ores and Indian relics, which was granted, and it is expected that this will be the finest exhibition of minerals ever exhibited at Cincinnati. During the Exposition this year there will be an interesting test of traction engines will be an interesting test of traction engines of eight different patterns in one of the city parks. Besides the names which Cincinnati aspires to, viz.: "The Queen City of the West" and "The Paris of America," she seeks to be called the "City of Expositions," and judging from the success of her expositions of 1879 and 1880, we suppose the one to be held this year will also be successful.

Messrs. Tucker & Dorsey, of Indianapolis, anticipate largely increased sales of their "Daisy" store trucks with Martin's patent casters. Orders are coming in for this season's supplies much earlier than in past years, and the amounts ordered are much larger. They are shipping largely to Europe. larger. They are shipping largely to Europe and the United States, and now estimate the production of their goods by tons instead of by the gross, as in the first years of their manu-

The works of Messrs. R. P. Kimberlin & Co., manufacturers of the "Iron Duke" attachment, for cultivators, at Indianapolis, have had to be increased in capacity. The company have recently made some improvements in the attachment, by which the price is materially reduced without changing its M. E. Bunger & Co., formerly of the sam

ILLINOIS

The Secretary of State has licensed the Chicago Trace Lock Co., capital stock \$25,ooo; incorporators, Jos. Stockton, Charles
Durphy, and Samuel K. Dow. The Company will manufacture patent trace locks.
The Northwestern Horse Nail Co., of Chicago, are still pushed to their fullest capacity, turning out their superior produc-

The stock of the Piano Manufacturing Company has been all taken, the amount being \$100,000, and a call has been issued to the stockholders for a meeting on March I, for the election of directors and the transa

tion of other necessary business. The shaft-ing for the shops is on hand and the hangers are being put up. A part of the machinery will be along soon. The Chicago Die and Machine Works for the past month have been actively engaged constructing a number of barb wire machines

and special tin-can machinery of entirely new designs for parties in this city. They run their works full time, employing 20 hands The Vulcan Iron Works, of Chicago, are

constructing for O. B. Green, two marine engines, with cylinders 18 x 20. They are also making for the Illinois Improvement

The capital stock of the Crystal City Plateglass Company was increased recently from \$600,000 to \$1,000,000. The works, already quite extensive, will be doubled in capacity.

Another elevator, equal to 600,000 busquite extensive, will be doubled in capacity.

The pay roll of the Springfield Watch Factory, for the past month, contained 520 names, and the amount paid them was \$22,-

The United States Steel Horse Shoe Com-pany are running their works at Brighton Park day and night, on orders for the Dun-ning patent steel horse shoe. They are at

ware, are running their full force; they are placing on the market a new furniture and truck caster which is being favorably received by the trade. Among their specialties may be mentioned the "perfect" and "standard" sash locks, of which they have sold largely during the past two years, both in the United States and Great Britian. Their capacity for turning out these locks amount to shout core new diver.

amount to about 3000 per diem. MISSOURI.

The process of rebuilding the partially destroyed copper and brass works of Conrad Siebel, St. Louis, is being vigorously pushed, the new buildings being considerably larger than the old, and specially adapted for the uses to which they are put. The disaster does not delay the execution of work there, and orders for goods and machinery are and orders for goods and machinery are filled with promptness.

M. M. Buck & Co., dealers in railroad

fishbars, bolts and nuts enough to equip 100 miles of road. Messrs. Buck & Co. have also accepted an order for similar equipments for sixty miles of the Texas and Pacific Railroad, of which Col. J. W. Paramore is president.

ident.

The St. Louis Stamping Company's rolling mills are in full operation, manufacturing as a specialty fine qualities of sheet iron that is being consumed in their business—making granite hollowware. Considerable additions are being made at these works in the way of furnaces, machinery, etc., demanded by their rapidly increasing business.

The Chouteau, Harrison & Valle Iron Company have recently secured a number of large contracts for boiler plates and high-

large contracts for boiler plates and high-grade bridge iron. Their mills (the Laclede Rolling Mills) were started up again on Monday morning after a six weeks-stop for

KENTUCKY.

It is understood that the Oakdale Iron Company will soon commence the erection of a charcoal furnace at Hunnicut Station, on the Cincinnati Southern Railway, which point is hereafter to be known as Oakdale Junction.

Kenton Furnace is chopping 10,000 cords, has her coal house full of charcoal and will resume her blast by the 10th of April.

The nail and mill department of the Norton Iron Works are running full.

Ashland Furnace postponed resuming her blast till next week.

Hunnewell continues at her regular winter

average of 18 tons per day. TENNESSEE.

Business is reported very good at C. C. Lewis & Co.'s saw works in Chattanooga. The furnace being built at Cowan is to have three Whitwell stoves and two large Weimer engines.

GEORGIA

The furnace at Ridge Valley has been running full time since about the first of this month and doing well. The company recently lost about 50 cords of prepared wood by fire in a neighboring mill.

ALABAMA

The Alice furnace, at Birmingham, has been working admirably since the repair of its broken machinery.

MICHIGAN.

The Milwaukee Iron Mining Company will be the style of the new corporation which succeeds to the ownership of the mine of that name, lately sold by Adams & Foley The mine has been stocked on a basis of \$210,000—12,000 shares having been sold at that rate, which pays the purchase money and places \$26,000 in the company's treasury. The remaining 8000 shares are held by those who took the option and negotiated

The means and money to secure the estab-

been worked in the Menominee blast furnace, and Mr. Clark, the manager, states that it has given unqualified satisfaction. It is now his intention to work the Cleveland, Norway and Florence Ores together in the

furnace, to see how they will act.

We learn that 5000 shares of the Humboldt mine have been sold for \$20 per Manistee believes it has sand suitable for

making glass, and wants capitalists to come in and establish glass works. Mr. Dumont, the supervising inspector of

Mr. Dumont, the supervising inspector of steam vessels, says the original regulation of the board with reference to the space separating the woodwork from the boilers of steam vessels should be modified, but that the recent action, reducing the space from 10 to 4 inches, would increase the risk of fire and prevent proper inspection.

Pittsburgh is gaining a good reputation for building steel boats. Contracts have recently been made with Rees & Thorn for a steel boat for Central America, and two more for Thomas Collins, agent of the Saratoga Railroad, for use on the lake.

The French engineers and working party who have arrived at the Isthmus of Panama, express disgust at the charges made for board, and propose to import their own

By assessment and the sale of lands, the Brooklyn Elevated Railroad Company expect to raise nearly \$3,000,000 and finish the work, taking it out of the hands of the

Consul General Alfred E. Lee, of Frank-fort-on-Main, writes as follows in his annual report to the State department: The great bane and drawback of our trade here in American articles is not so much competition ning patent steel horse shoe. They are at present putting in additional machinery for producing this shoe.

The Payson Manufacturing Company, who manufacture a general line of builders' hardware, are running their full force; they are placing on the market a new furniture and truck caster which is being favorably received by the trade. Among their specialties may be mentioned the "perfect" and "standard" sash locks, of which they have sold largely during the past two years, both the spurious articles are bought because they are cheap, and with the consciousness that they are next to worthless as compared with the real. This quality of cheapness has become the more acceptable, because of the great advance in prices which have taken place in the United States, and which have widened the breach between genuine wares and spurious. Should prices recede somewhat, the temptation to buy shoddy articles and the profits of selling them will likewise diminish. While, therefore, our manufacturers cannot be blamed for selling their wares at high prices at home in preference to selling them at lower ones abroad, they and orders for goods and machinery are to filled with promptness.

M. M. Buck & Co., dealers in railroad supplies, of St. Louis, on Monday of this week sold to an agent of Jay Gould spikes, bolts and nuts enough to equip 100 prices shall somewhat recede. Did Germany enjoy anything like such prosperity as that of the United States, that extension would take place now, even as prices stand, but take place now, even as prices stand, but unfortunately such prosperity does not exist in Germany, or in any other country on this side of the Atlantic. We must expect, therefore, that our foreign trade will be somewhat limited and hindered in propor-tion as the ability of our customers to buy is tion as the ability of our customers to buy is crippled, and that much the same conditions which prevail with us must be the conditions which prevail here as to a great import

traffic. But the foreign imitator has also his dis-advantages as compared with the American manufacturer, and one of these is that in the quality of his wares the latter sets the former at defiance. This firm bulwark of superior quality is the one fortress that our producers should never surrender. Another disadvantage to the imitator lies in the fact that our American mechanics and artisans are continually improving their models. In many European countries, even the most enlightened, a clumsy instrument is often used unchanged for generations, simply because such is the custom. In the United States, on the contrary, the spirit of progres-

sion soizes every department of industry, and irrational habit counts for nothing against it. No sooner, therefore, does the foreign imitator get fairly settled into an easy-going way of manufacturing counterfeit reproductions of a particular improvement, than a new model of the same article comes along, which is so much more saleable than the old that he is as much behind as ever. A fur-ther disadvantage the imitators labor under ther disadvantage the imitators labor under is, that most people prefer an honest, original article, even at a higher price, to a cheap counterfeit. It is only when the spurious article is palmed off as genuine that serious harm to the trade is done. For this, among other reasons, our exporters should be very careful to choose responsible agents, whose character and standing are a sufficient guaranty with the people against deception. Such agents will receive the honest trade, and the imitators will be able to sell shoddy only as shoddy. only as shoddy.

The Bulletin contains the following: When we published the particulars of the large yield of Bessemer steel by the Cambria Iron Company's Steel Works, we thought the Edgar Thomson Steel Company would soon be heard from, and were, therefore, not surprised to receive the following letter from Capt. William R. Jones: "Your statement showing the work done by the Cambria Iron Company's Bessemer department is correct as far as claiming it to be the best 24 hours', the best week's, and the best month's work. But the last item does not place them in the But the last item does not place them in the front rank. 'For the last 12 months' the Edgar Thomson Steel Company's works produced 130,694 gross tons 2110 lbs. of ingots, 106,722 tons 2000 lbs. of rails, and 3421 ishment of a large Eastern carriage manufactory at Kalamazoo are now certain to be
obtained, and the works will be removed to
that place the coming spring.

Considerable Florence ore has already

100,722 tons 2050 lbs. of rails, and 3421
tons 2011 lbs. of merchant steel: total
finished product, 110,144 tons 1831 lbs.
This was done in the same time in which the
Cambria Iron Company's works produced 126,194 tons 740 lbs. of ingots.

> The Verein zur Beförderung des Gewerbfleisses, of Berlin, offers through its secretary, Dr. H. Wedding, 1000 marks, or \$250 and a silver medal, for the best essay on the effect of the chemical and physical action of steel processes upon a basic lining. A similar amount is offered for the best critical essay on existing blowing engines of Bessemer works, and a third prize competi-tion is announced for the best work on the rogress in the manufacture of wire during the last 10 years.

> Mayor Lydecker, the engineer in charge Mayor Lydecker, the engineer in charge of Chicago harbor, in answer to a call of the Secretary of War, says the proposed transfer of a considerable portion of the lake front at that city to the Illinois Central Railway Company should not be made until all projects for this occupation are submitted to the engineer department for approval. This view is in accordance with a strengless. view is in accordance with a strong local interest opposed to an alleged attempted monopoly."

> Wages in Japan are incredibly low. A correspondent at Yokohama, who has been through the paper mills at Oji and Kioto, says engineers receive only about forty cents a day, but there is a most promising future in this branch of industry as soon as the railroads provide transportation, when the mills can be built near the mountain ranges where there is abundant water power.

> The German government having consented to take part in the International Electric Exhibition at Paris, a strong desire is expressed that the United States should be creditably represented. American inventors may well claim to be recognized.

Special Notices.

SECOND-HAND FOR SALE LOW.

March List No. 1.

- r Pit Lathe, 31½ ft. swing, will turn a pulley as wide as 9 ft. face.

 Pit Lathe, 16 ft. swing, will turn a pulley 30 inch face. with gear-cutting attachment.

 Lathes, 21 in. swing, 8 ft. bed. Rod feed.

 Engine Lathe, 36 in. x 25 ft. 6 in. Cross feed, new

- 2 Engine Lathe, 26 in. x 25 ft. 6 in. Cross feed, new.
 Engine Lathe, 20 in. x 8 ft. Second-hand.
 Engine Lathe, 11 in. swing, 4 ft. bed.
 Foot Lathes.
 Hortzontal Drilling Lathe, 24 in. swing, 19 ft. bed.
 Planer, 36 in. x 10 ft.
 Planer, 24 in. x 16 ft.
 Planer, 24 in. x 16 ft.
 Dimension Planer, 24 in. x 18 ft.
 Upright Drill Press, 16 in. swing.
 Vertical Boring and Turning Machine, 60 inches automatic feed at any angle. Second-hand.
 Large Upright Drill, 54 in. swing. Second-hand.
 Eugension Drill.
 Four-spindle Drill.
 Four-spindle Drill.
 Four-spindle Drill.
 Four-spindle Drill.
 Four-spindle Drill.
 Soring Bar, 13½ in. diam., 10 ft long, self-feeding.
 Forcing Machine, for forcing shafts off pulleys.
 Combined Punch and Shear.
 Steam Hammer. Cylinder, 7½ x 30 in.
 Steam Hammer. Cylinder, 11 x 36 in.
 Steam Hammer. Cylinder, 11 x 36 in.
 Stray Horizontal Engine. New.
 N. Y. Safety Fower Co. Engine, 8x12.
 McKenzie Cupolas, 4 ft. x 4½ inside.
 Ladles, &c., &c.

- Pattern Makers' Lathes.
 Post Drills.
 Lathe, 16 x 6.
- Post Drins.
 Lathe, 16 x 6.
 Uprigh: Drills, 26 in swing.
 Boiler Punch, 18-in. throat.
 Hand-lever Punch.
 Hand Punches.
 Trip Hammer, 100 lbs.
 Boit Pointer.
 Con Curter.
- Boit Pointer. Cam Cutter. Elliss Blind Slat Machine. Pulley Poishing Lathe. Double-acting Power Presses. Single-acting Foot Presses.
- Foot Presses.

 of Forges, Old Lathes, Planer and Lathe,
 Tools, Mandrels, Blacksmith and other Tools.
 Wood Working Machinery. For sale by

The Geo. Place Machinery Agency,

121 Chambers and 103 Reade Sts., NEW YORK.

HAVE YOU READ THIS?

HAVE XOU READ THIS?

JENNINGS DISCOUNT TABLES.

4 s to 8 s and all the combinations.)
We find them correct and wonderfully "labor saving."—Sargens & Co., New York.

"Your discount tables are all you claim for them."
T. W. Root, with Russell & Erwin Mrg. Co., Toledo. O.
Counting House Edition.

\$2 co
Pocket Edition, Cloth Bound.

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Pocket Edition, Paper Covers.

Currency may be sent by mail at publishers' risk.

Address, B. H. JENNINGS, Deep River, Conn.

SPECIAL OFFER TILL JULY 1st.

Don't Fail to Read It. From March ist to July ist I will send the three editions of my Discount Beek to any responsible house in the United States, for Kramination, with privilege of returning any or all of them, provided the party will pay the return postage, which would be thirteen cents on the counting House, and two cents each on the Pocket Editions. Contents of each edition are the same. Please apply by Postal to

S. H. JENNINGS,

Deep River, Conn.

To Manufacturers.

The advertiser can furnish office, salesroom and storage, with salesmen calling on all the jobbing trade from New York to California and South. To a manufacturer wishing New York office and salesmen this is a most excellent opportunity. FINE LOCATION.

Wanted.

Office of The Iron Age, 83 Reade st., New York

A FOREMAN MOLDER

for foundry where large castings for steam en gines, &c., are made.

Apply by letter to Office of The Iron Age, No. 83 Reade St., N. Y.

Wanted.

From March 1st, a situation as salesman in a wholesale Hardware house. Have had seven years' experience. Would travel for a manufacturer. Have had two years' experience on road with stoves. Address,

Office of The Iron Age, 83 Reads St., New York.

Desirable Factory Property for Sale

Located at Taunton, Mass, in the heart of the city, consisting of \$65,000 square feet of land with buildings thereon, namely, large Machine Shop, large Foundry, Erecting Shop, Blacksmith Shop, Pattern Shop, building for storing patterns, &c. The buildings can be adapted to almost any manufacturing purpose. Apply to THE GEORGE PLACE MACHINERY AGENCY, 121 Chambers st., New York City.

HEAVY IRON WORKS WANTED.

An Eastern Manufacturing Company, doing a profit able business in heavy wrought from structures, the manufacture and saie of which they control for the United States and Canada, wish to establish additional work, located in the West, South, Pacific Coast and Province of Ontario. Must have first-class freight advantages for receiving rolled structural and merchant iron. Address WM, O. DOUGLAS, Binghamton, N. Y.

Wanted.

Traveling salesman of energy, ability and experience, on commission or salary. To those having above requirements and acquaintance with the Hardware trade, either in the East or West, a liberal arrangement will be opened by addressing, stating age, knowledge of the business, reference, &c. I. M. D., Office of The Iron Age, §3 Reade St., New York

For Sale.

Heavy lathe, 7 feet swing, 16 feet bed. Steam hammer. Heavy geared hoisters. Double propeller engine cylinders, 26x25.

22 East Street, near Delancey,

NEW YORK CITY.

WANTED.—An additional line of hardware to handle, either on salary or commission, by a salesman who calls on the trade in the principal cities East and West. Satisfactory references

given. Address
SALESMAN, Box 40.
Office of The Iron Age, 83 Reade st., New Y

Sanderson Bros. Steel Co.

er of shares for sale by EDWARD FRITH & SON. 241 Pearl street, New York.

Special Notices.

For Sale.

and NEW TOOLS Nut, Bolt and Washer Machinery.

Two No. 2 headers, capacity 1-inch bolts hexagon and square down to 36 in. The only machine in use that can make collar bolts.
Two No. 3 nut machines, capable of making all sizes nuts, hexagon or square, 1/2-in. bolt size and

sizes nuts, hexagon or square, ½-10. Dolt mas cancunder.

No. 2 nut machine for all nuts, hexagon and square, 1 in. and under.

No. 1 nut machine for 1½-in. nuts.

No. 1½ bolt cutters, double head, automatic stop.

No. ½ bolt cutters, double head, automatic stop.

No. 1 washer machines for 2 in. washers and under.

No. 2 washer machines for 2 in. washers and under.

Bolt pointers, nut tappers, burring machines, circular shears and complete outfits for bolt and nut making—large assortment on hand.

I NOVES SMITH established these manufac-

J. NOYES SMITH established these manufactures in 1872, and all the machines built by him and ourselves, comprising over 100 in the United States and Canada, are in constant use to-day.

YORK & SMITH, Manufacturers, CLEVELAND, OHIO. For Sale.

One Pratt & Whitney Tire Blank Header, new. Two Pratt & Whitney Screw Machines, capacity up to three-quarter inch, in good order, with a quantity of tools and dies.

One Pratt & Whitney make of Hot-pressed Nut Machine, cuts up to three-quarter inch, and could go as high as seven-eight inch nuts, suitable for parties making track bolts, &c.

Also a full line of Bolt and Nut Machinery of

NATIONAL MACHINERY CO., Cleveland, O.

For Sale.

The Little Schuylkill Rolling Mill,

at Milldale, Schuylkill County, Pa., near Port Clinton, on the line of the Philadelphia and Reading Railroad, consisting of a Merchant Bar Mill in complete running order, with a splendid water power sufficient to run the mill two-thirds of the year. Engines, Boilers, Foundry and Machine Shop, with Lathe for turning rolls, and all other appurtenances necessary to commence operation at once. Together with dwellings, stables and large tract of land, to be sold low if applied for soon. For further particulars address or apply to
J. O. RICHARDSON,

No. 232 Dock street, Philadelphia.

For Sale.

THE COLUMBIA FOUNDRY AND MACHINE WORKS.

Lot 230 ft. front, 198 ft. deep. Machine Shop 60 x40, with Pattern Shop in second story, and Smith Shop 34 x 28, with Engine and Boller rooms attached. Foundry 75 x 53, with two Cranes and Brass Furnaces; Brick Buildings, slate roofs. Also, one Frame Pattern Warehouse, 48 x 28, slate roof. Drawings and Patterns for Blate Furnace and Rolling Mill work, Gas Works, Sugar Apparatus, Steam Engines and Machinery. Works established 1833, New Shops 1872. Shipments over competing Hailroads. Undersigned have run the works continuously since 1870, and are doing a good business. Sale solely to dissolve partnership. PERROTTET & HOYT.

Columbia, Pa.

For Sale.

Excellent Manufacturing Sites on the line of Philadelphia and Reading Railroad, near Phœnixville, Pa. No cash required in pay-

Address,

Z. ACKER, Phœnixville, Pa.

For Sale.

FOUNDRY AND MACHINE SHOP, Estab lished 1842. Well stocked with Patterns and Louis, Business good. Satisfactory reasons for selling. Address A. L. VAIL, Middletown, N. Y.

For Sale.

A complete stock of Hardware, Iron, Steel, &c., the Mississippi. Large jobbing and retail trade established. Satisfactory reasons given for selling.

Address, WESTERN, Office of The Iron Age, 83 Reade St., New York.

For Sale.

A first-class Hardware Business in a wide-awake town in Central Michigan. Only one other Hardware store. Stock all new and fresh, Will invoice about \$5000

Office of The Iron Age, 83 Reade St., New York

Locomotives for Sale.

Four Locomotives, 4 ft. 81/2 in. gauge, built by Baldwin Locomotive Works for passenger service Cylinders, 14x24; diameter of drivers, 58 in.; fuel bituminous coal. All in good running order. Address, W. S. WILSON.

\$27 South 4th st., Philadelphia. WANTED—A situation in a wholesale or retail Hardware Store by a young man of five years' experience. Time expires with present employer March 1. Good references furnished from employer and others.

Address,
Office of The Iron Age, 83 Reade St., N. Y.

FOR SALE.

ew Vertical Engines, 5×6 , 6×6 , 7×6 , 12×12 , econd-hand Vertical engines, 4×6 , 7×10 , 8×8 , second hand Horizontal Engines, 11×14 , 12×24 , $7/2 \times 12$, 6×16 , $15/4 \times 12$, 6×16 , $15/4 \times 12$, 16×12 , 1Full description of any of these on application

A. G. BROOKS & WINEBRENER, 26: North Third St., Philadelphia.

WANTED.-A Guide Mill Roller; one who can turn rolls. A steady and competent man; must have good references Address ROLLING MILL,
Office of The Iron Age, 83 Reade St., New York,

Special Notices.

ATTENTION, IRON MEN. Assignee's Sale.

THE RIVERSIDE ROLLING MILL. THE STATE OF OHIO, HAMILTON COUNTY, S. S.—Pursuant to the command of an order for sale from the Probate Court of Hamilton County, Ohio, and to us lirected, we will offer for sale at public auction, on he premises, in the village of Riverside, near Cullom Station, in Hamilton County, Ohio,

On THURSDAY, March 10, 1881,

Station, in Hamilton County, Ohio,

On THURSDAY, March 10, 1881,
at 120 clock m., the following described property as an entirety, and being the Riverside Rolling Mill, to wit:

That certain lot of real estate situated in Section 10, 100 mills, and the point where the west line of lot No. two (2) of the state of the lot of lot of the lot of 12 o'clock m., the following described property as entirety, and being the Riverside Rolling Mill, to

TO IRON MANUFACTURERS. For Sale.

The Rolling and Puddling Mills of the late Hudson River Iron Co., at Poughkeepsie, N. Y. These mills, with all the land west of the New York Central and Hudson River Railroad tracks and a large river front, are for sale. The Mills are in good condition for immediate occupancy. They contain all the machinery necessary for the manufacture of Merchant Iron, Rail-and Bolt Spike, Bolts, &c., &c. A large portion of the purchase money may remain on the property. Parties in search of this kind of property are invited to examine it, and for other particulars to address W. S. JOHNSTON, Trustee.

Poughkeepsie, N. Y.

For Sale.

LARGE SLOTTER, 6 ft. between Columns, 4-ft Table, stroke 18 in., ind. cross and circular move A heavy, well-built tool; in first-rate or der; will be sold low. Photo, on applicatio

A. G. BROOKS & WINEBRENER, 261 N. Third street, Philadelphia

FOR SALE,

Job Lots and Bankrupt Stocks Hardware. Great bargains offered to the trade.

A. W. WHEELER,

141 Lake St.. Chicago, 111.

One-Thousand-Pound

STEAM HAMMER FOR SALE. In good order, and can be seen at our works,

WOOD, SMITH & CO.. For Sale.

To close an estate. The MACHINERY, FUR-NACES, TOOLS, &c., of a Plate and Sheet Mill complete. Terms, one-third cash, balance long time if wanted. Address THOS. B. McKILLIP.

72 Washington St., Chicago, Ill. For Sale.

Putnam Machine Co. Automatic Cut-off Engine 13 x 36, band wheel, 10 ft, diameter, 21 inch face, in perfect order. Also, one 8 x 24 Side-spring E. P. BULLARD,

Dealer in Machinery, 14 Dey st., New York

For Sale.

6 x 8 DOUBLE ENGINE. Link Motion. Suitable for Mine, Furnace or Quarry hoisting. Used very little. Good as new.

A. G. BROOKS & WINEBRENER,

261 N. 3d St., Philadelphia. A DESIGNER and draughtsman, who is also practical, with good experience in one of the leading machine tool shops, and in sewing machine and other shops in New England, will soon be at liberty to engage.

DESIGNER.

Special Notices.

Second-Hand and New **Machinists' Tools**

One r-Spindle Edging Machine. Smith & Garvin. One 2-Spindle Profiling Machine. Good as new, One Engine Lathe, 50 in. x 20 ft. Ames, new.
One Engine Lathe, 56 in. x 24 ft.
One
"" 32 in. x 16 ft.
Ames, new.
One Engine Lathe, 26 in. x 18 ft.
Fifield, new. One Engine Lathe, 24 in. x 12 ft. N. Y. Steam Eng. Co.

one Engine Lathe, 24 in. x 15 ft. Double head chain one Engine Lathe, 16 in. s. x 6 ft. Ames, new One Engine Lathe, 13 in. s. x 6 ft. Ames, new

One Engine Lathe, 13 in. x 5t. Cady, good order.
One "1s in. x 5t. Lathe.
One 13-in. stroke Slotter. Betts. At order.
Two Gould Milling Machines.
Two No. 2 Pratt & Whitney Millers. Lincoln. Two Manhattan Millers. One No. 1 Screw Machine. Jones & Lamson, new

One Gear Cutter, 36 in. Putnam.
One " 24 in. Gould.
Six Hand Lather, 11, 14 and 16 in. s. x 4½ to 7 ft. bed. One 24-in. Shaper. Hendey Mch. Co., new. One oin. Hewes & Phillips.

One 9 in. "Hewes & Phillips.
One 15-in. stroke Shaper. Hendey Mach. Co., new. One 36 in. x 12 ft. Planer. Betts, new. One 5-spindle Drill. Garvin, & 1.
One 34 in. Drill, Bk. Geared.
Three 20 in. Drills. Prentice, new.
One 5-spindle Horizontal Drilling Machine.
One 6-spindle Horizontal Drilling Machine.
One No. 4 Wilder Punch Press. New. Geared.
One No. 5 "Shear Geared."
One No. 5 "Shear Geared."
One Bement Bolt Cutter, 7 in.
One Tapping Machine. B. & G.
One No. 5 Root Blower.
One No. 5 Root Blower.
One 10 Dr. Ferris & Niles Steam Hammer.
One 10 Dr. Ferris & Niles Steam Hammer.
Belting, Shazwing, Pulleys and Miscellaneous Machinery.

E. P. BULLARD, 14 Dey St., New York,

GENERAL EASTERN AGENT FOR Akron Iron Co.'s Hot Polished Shafting.

For Sale.

Stock of hardware, stoves and implements, and ore furniture, in one of the best towns in Kansas HARDWARE.

Box 366, Salina, Kansas.

For Sale.

HARDWARE.-The controlling interest or the Price, \$15, sent by mail. whole of a Jobbing Hardware House, already established and doing a profitable business; located in one of the large Western cities. For further particulars, address Office of The Iron Age, 83 Reade St., New York

Wanted.

A good new or second-hand fish plate punch trong enough to punch four holes and shear the late at once. Address with description and

P. O. BOX 737. Pottaville, Pa.

Wanted.

A practical business man, who can command \$8000 to \$10,000, to take the place of one retiring, in a Hardware manufacturing Company. To such a party a permanent position will be secured, will bear investigation. Address POSITION,
Office of The Iron Age, 83 Reade St., New York.

To Manufacturers and Hardware Merchants.

WANTED. By a man of experience in positions of trust, who has a knowledge of the requirements of the export trade in American Hardware, having resided and traveled abroad for business, also held for several years past a responsible position in a manufactory, a new engagement as office man or travel to solicit trade and establish connections in toreign countries.

Address, ENTERPRISE, Office of The Iron Age, 83 Reade Street, N. Y.

Situation Wanted. As Amanuensis or Short-hand Writer,

Private Secretary, Bookkeeper, &c., by a yo man thoroughly qualified to fill any position trust or responsibility. References first-class, Address, SHORT HAND, Office of *The Iron Age*, 83 Reade St., New Yo

Wanted.

Some Second-hand T Rail,

From 16 to 18 lbs. per yard, enough to make 1 mile of track. State condition and price.
Address, THEO. B. BASSELIN.

Wanted.

Croghan, Lewis County, N. Y.

A party with good facilities solicits orders for the manufacture of HARDWARE SPECIALTIES AND NOVELTIES.

Address, 609 Tamarind St., Philadelphia, Pa Wanted.

To Manufacture Machinery and Special Tools for the Railway Trade,

y an old established firm, with ample facilities. Address, H. C. A., Office of The Iron Age, 220 S. 4th St., Phila., Pa.

Wanted.

Situation wanted by a first-class double-entry bookkeeper, stenographer and clerk of ten years' experience in rolling mill business, and now engaged as such at a rolling mill. Highest testimonials furnished if desired. Address, Office of The Iron Age, 83 Reade St., New York

Hardware and implement Dealers. A most desirable agency for Thresners, Horse owers and Engines, can be had in all territory not already occupied, by writing to THE AULTMAN & TAYLOR CO., Mansfield, Ohio. berty to engage.

Obs. Correspondence solicited.

When you apply for agency, state where you saw this advertisement.

Special Notices.

New and Second-Hand

MACHINERY.

One Horizontal Corliss Engine, 250 h. p. One Horizontal Engine, 25½ in. x30 in. Todd & Raf-

One Horizontal Engine, 15½ in. x30 in. Todd & Malferty.
One Horiz'l Engine, 9 in. x 12 in. Eric Iron Works.
One Horizontal Engine, 3 in.x6 in.
One Portable Engine, 5 horse power
Portable Engines from 10 to 25 H. P.
Two Horizontal Return Tub. Boilers, 100 h. p. each.
One Hor. Tubular Boiler, 6 ft x14 ft. 67 4 in. tubes.
Two Hor. Tub. Boilers, 45 ft. x13 ft. 43 4 in. tubes
One Upright Tubulsr Boiler, 15 H. P.
One Locomotive Steel Boiler, 30 H. P.

MACHINISTS' TOOLS.

One Lathe, 24 in. x12 ft, screw cut.
One Lathe, 26 in. x2 ft. Wood & Light,
One Lathe, 15 in. x6 ft. Pond.
One Lathe, 15 in. x6 ft. Pond.
One Lathe, 15 in. x6 ft. Shepard Lathe Co.
One Square Arbor Fox Lathe.
One Shaping Machine, 15 in. stroke. Hendey
Machine Works.
One Planer, 36 in. x26 ft. Chain feed.
One Planer, 36 in. x26 ft. Chain feed.
One Upright Drill, 32 in. Pond.
One Tapping Machine, 25 in. Saunders' Sons.
One Tapping Machine, 6 in. Saunders' Sons.
One Tapping Machine, 6 in. Saunders' Sons.
One Bolt Cutter, 1 to 4 inches. Saunders' Sons,
makers.

J. GRAY'S MACHINERY DEPOT. 37 Dey Street, New York, U. S. A.

Illustrated Catalogue

Hardware, Cutlery, &c.

We have issued a very complete work of this kind, embracing Hardware, Cutlery, Sporting Goods, Housefurnishing Goods, &c.; 1140 pages, with 5498 illustrations, also Lists, Tables, &c., making this book almost invaluable to Hardware Dealers.

Simmons Hardware Co., St. Louis, Mo.

To Railroad Engineers, Importers and Others.

DAVID OWEN,

Inspector of Steel and Iron Rails, Merthyr Tydfil, England, Undertakes the inspection of Steel and Iron Rails, Permanent Way Materials, &c., &c., in England. Belgium and Germany. Thoroughly practical, of many years' experience. Can give very best of references from chief railroad engineers, merchants and others who have employed me to inspect their railroad materials during manufacture and delivery for the last to years. Correspondence solicited. Instructions by mail or cable punctually attended to.

L. SALOMON,

Importer of and dealer in Upholsterers' Needles, Gilt Nails and Housefurnishing Hardware.

Agent for the Champion and Standard Knox Fluting Machines. No. 10 Murray St., New York.

SECOND-HAND DROP PRESSES

BOUGHT, SOLD & EXCHANGED. BEECHER & PECK.

Lock Box 122, New Haven, Conn. Bissell & Welles,

Wholesale Hardware Auctioneers. Sales held weekly for the trade. Consignments solicited. We refer to the leading Manufacturers and importers.

Europe.

Matheson & Grant's Address is

32 Walbrook, London, England. Engineers and Commission Agents for all busiess relating to engineering and metals in Europe.

Telegraph address,

MATHESON, WALBROOK, LONDON. New Vertical Boilers—on Hand. 6 in. x 7 ft., 50 tubes, 42 in. x 7 ft., 90 tubes,

44 in. x 8 ft., 104 tubes, 48 m. x 10 ft., 124 tules, 30 in. x 6 ft., 50 tubes, with base, grates, smoke dome and fixtures comwith base, grates, complete, ready to ship.

A. G. BROOKS & WINEBRENER, 261 N. 3d st., Philadelphia.

The Sherman Process Co. 9 Pemberton Square, Boston, Mass.,

42 in. x 8 ft., 90 tubes,

Issue Licenses to use the Process for the Manufacture of Iron and Steel In the Bessenger Converter, Crucible, Siemens Martin, Puddling, Blast and Cupola Furnaces.

The use of this Process improves the quality of the product, saves fuel and labor, and does not re-quire any change in furnace or manner of working See page 17 of The Iron Age of Oct. 25th, 1877.

Trade Report.

Office of The Iron Age, Wednesday Evening, March 2, 1881.

Up to the close of business hours this afternoon Wall street was in a state of suspense, pending the Fate of the Funding Bill, which has agitated it for the entire week. The last of the Appropriation Bills was taken up in the House to-day, and rushed through to the Senate, leaving the Funding Bill next in order. The Republicans evidently hoped to accomplish the defeat of the bill by filibustering, but were said to have agreed to its passage provided the coercive clauses were stricken out. Up to the latest moment there is no certainty as to the result. The prevailing impression in Wall street is that, in case it should pass the President would apply his veto, though it is supposed that he would affix his signature should Mr. Garfield, who is now on the spot, desire it. A much better condition of the market is predicted when Congress adjourns. Great alarm was occasioned by the passage of the bill, insomuch that \$16,000,000 were deposited by the national banks in the government treasury to redeem circulation which they wished to surrender. This amount so suddenly withdrawn, a large portion of it from the bank reserves, caused a stringency amounting almost to a panic, and threatened widespread disaster. Money was quoted at 11/2 % per diem, in addition to legal interest, or about 474 % per annum, and prices on the Stock Exchange fell I @ 21 %. At the critical moment Secretary Sherman offered to purchase bonds in large amounts, most of which had been called in for redemption May 1. The net result was that about \$19.000.000 of lawful money was transferred from the bank reserves to the Treasury in Washington. It is a matter for congratulation that not a single firm of any note has thus far gone under, as a result of the excessive financial perturbations now happily at an end.

The immediate effect of the disturbance above noticed was a decline of 1/4 @ 5/8 in bonds, and I to 15 % in stocks. Foreign exchange dropped from 4.84 @ 4.861/2 to 4.78 @ 4.80 1/2 for 60 day and demand bills respectively. Violent fluctuations followed. the market becoming wholly unsettled. Today the posted rates for prime bankers' sterling are 4.80 @ ½ and 4.82½ @ 4.83.

The actual rates are 4.78½ @ 4.79½ and 4.81 @ 4.82½. Cables are 4.82 @ ¾.

Prime commercial bills are 4.82 @ ¾.

Marietta and Cincinnati Pref.

Marietta and Cincinnati Actual Pref.

Marietta and Cincinnati Actual Pref.

Marietta and Cincinnati Actual Pref.

Marietta and Cincinnati Pref.

Marietta and Cincinnati Actual Pref.

Marietta and Cincinnati Pref.

Marietta and Cincinnati Actual Pref.

Marietta and Cincinnati Actual Pref.

Marietta and Cincinnati Actual Pref.

Marietta and Cincinnati Pref.

Marietta and C Prime commercial bills are 4.77 @ 4.78. the last hour foreign exchange is dull but steady, and call loans are down to 4 %.

The importations of specie and bullion at this port during the week ending February 25 were \$55,108, against a total of \$553,661 for the week ending February 28 last year The importations since the 1st of January and since the 1st of August compare a follows with the corresponding periods last

GoldSilver	1881.	January 1 1880, \$842,890 1,014,479
Total	.\$5,374,451	\$1,847,869
Gold	1880-81.	August 1 1879–80. \$75,862,862 3,991,993
FF-4-3	9-6	Q 0 0

On the Stock Exchange the most active stocks were the coal shares, Western Union Telegraph, Union Pacific and Pacific Mail, Erie, Northern Pacific, Iron Mountain, Can-ada Southern and Wabash. Rumor has it that not only Rufus Hatch has withdrawn from the street, but Mr. Keene is getting out preparatory to a visit to a Europe next

An analysis of the bank totals of this week, compared with that of last week, is Amie

F	ebruary 19. I			
Loans	\$320,807,300	316,584,400	Dec.	\$4,222,900
Specie	65,849,600	58,074,200		
Legal t'd'rs	14,887,200	15,048,000		
Tot. reserve	80,736,800	73,122,200	Dec.	7,014,000
Deposits Reserve re-	307,718,100	200,447,300	Dec.	21,170,000
quired	76,929,525	71,636,875	Dec.	5,292,700
Surplus	3,807,275	1,485,375	Dec.	2,331,000
Circulation.	18,259,500	16,181,600	Dec.	2,077,900

Total for week Prev. reported		1880. \$7,848,877 61,771,929	\$881. \$8,907,346 51,343,429
Since Jan. 1	. \$44,561,218	\$69,620,800	\$60,250,775

Included in the imports of general mer chandise for the week were articles valued

CHUITCHE TOI END MOCK	44 01 0	COT STOTON	V 041010
as follows:			
	-	Quantity.	Value
Anvils		220	\$2,66
Brass goods		21	2,54
Bismuth		2	94
Bronzes		6	94
Chains and anchors	******	53	2,00
Copper			4.14
Cutlery		99	34,8
Guns			10,68
Hardware		X	5
Iron, pig, tons		2,654	54,85
Iron, sheet, tons		23	8,73
Railroad bars		T.944	11,98
Iron cotton ties		E01,1	1,00
Iron ore, tons		3,069	10,0
Iron, other, tons			67,00
Metal goods		61	9,30
Needles		4	1,43
Nickel		5	2,15
Old metal		0.0	30,16
Platina			3,04
Plated ware		X	79
Percussion caps		82	4.03
Saddlery		9	1,60
Steel		0,680	81,70
Silverware		4	20
Tin, boxes		80,300	89,27
11h, 2,388 slabs : 280,000 lb			60,07
Wire		49	57
Zane		101,307	4-39

EXPORTS, EXCLUSIVE OF SPECIE For the week ended March 1:

	For the week Prev. reported.	1879. \$6,382.485 41,603,566	1880. \$5,293.449 42,451,665	1881. \$8,528,255 49,944,040
	Since Jan. 1	\$47,986,051	\$47,745,334	\$58,472,295
	E	XPORTS OF	SPECIE.	
	For week en	ded Febru	ary 26:	
	Total for the wee	ek	*******	\$177,200
	Previously repor	ted		1,725,520
	Total since J	fanuary 1, 1	881	\$1,002,729
	Same time in 188	lo	*********	1,370,502
	Same time in 187	0	**********	3,073,166
	Same time in 187	8	**********	2,151,020
	Same time in 187	7	**********	2,899,814
	Same time in 187	6	********	7,888,281
	Same time in 187	5		13,555,808
	Same time in 187.	4	**********	5,566,279
J	Same time in 187	3		11,235,942
1	Same time in 187	2		2,810,367
1	Gorgenmant	hands a	A Alexander	

Government bonds at the close were

quoted as follows:	
Bid.	Aske
U. S. 6's 1831 registered	NOX:
U. S. 6's 1881 coupon 1013/2	101
U. S. 5's 1881 registered	IOO-
U. S. 5's 1881 coupon1001/	100
U. S. 416's 1891 registered	HII!
U. S. 41/4'8 1891 coupon 111	REES
U. S. 4's 1907 registered	113
U. S. 4'8 1907 coupon	113
U. S. Currency 68 1895	-
U. S. Currency 68 1896127	******
U. S. Currency 68 1897	****
U. S. Currency 68 1898	-
U. S. Currency 68 1899	-
The closing quotations were as follows)ws;

Bid. Asked.

American District Telegraph 66	
American Union Telegraph 7114	
Avisone	
Arizona 436	
Atlantic and Pacific Telegraph 42	
Burlington and Quincy	1
Clev., Col., Cin. and Indpls 85	
Col., Chic., and Ind. Cen 2334	
Chesapeake and Ohio	
" 1st Pref 35	
" ad Pref 26	
Caribou 21/2	
Colorado Coal and Iron	
Colorado Coal and Iron 47	
Cedar Falls	
Canada Southern	
Chicago and Alton137	3
Chicago, St. Louis and New Orleans 56	
Denver and Rio Grande 983/4	
Delaware, Lack, and Western 121 %	- 1
Deadwood	
Delaware & Hudson Canal	7
Danbury and Norwalk R. R 72	
Erie and Western	
Excelsior Mining	
Erie	
" Pref 86¾	
Express—Adams128	3
" Wells, Fargo117 1/2	1
" American 68	
" United States 56	
Homestake	
Houston and Texas 66%	
Hannibal and St. Joseph 53%	
Pref 97%	
Two Mountain	
Iron Mountain 50%	- 1

	Wells, Fargo	11756
1	44 American	
P	" United States	-6
•		
9	Homestake	27
	Houston and Texas	6636
	Hannibal and St. Joseph	4236
	66 th Prof	33/4
9	Town Miles Andrew	9773
2	Iron Mountain	59%
ı	Illinois Central	120%
	International and Gt. No	3-74
ı	Keokuk and Des Moines	0.0
	M. CORGE MING AND MORNEY.	0.0
	" Pref	0.0
	Kansas and Texas	4336
1	Lake Shore	12436
	Louisiana and Missouri	20.14
П	Foodstate and Allosouti	3179
	Louisville and Nashville	87
-]	Louisville, New Albany and Chic	70
	Little Pittsburgh	286
	Manietra and Chalaneti Dace	3/3

La.	Metropolitan Elevated1171/2
	Michigan Central
t	Mobile and Ohio 20
-	New York Elevated
t	Northern Pacific 6936
	New Central Coal 28
	Northwest
t	" Pref 1341/2
y	Nashville and Chattanooga 90
	New Jersey Central 1031/2
I	New York Central145%
	Ohio 42 1/4
	" Pref
у	Omaha44
8	" Pref 98%
	Ontario Silver 35
t	Ontario and Western 35%
	Pacific Mail55
_	Panama210
,	Peoria, Decatur & Evansville 361/2
2	Oregon Navigation
9	Pref. 61
A	Pome Wetertown and Odgenhurg

San Francis Pref...

ist Pref.

Texas and Pacific.

Terre Haute...

Pref...

Pref.

MINING STOCKS.

Union Pacific.... Western Union Telegraph The following were the closing quotamonth; also that Jay Gould has sold largely. tions:

s follows :					Alice
9 3 9450 11 10 1					Alta Mont
F	ebruary 19. I	ebruary 26	. Con	nparison.	American Flag
oans	\$320,807,300	316,584,400	Dec.	\$4,222,900	Bell Isle
pecie	65,849,600	58,074,200	Dec.	7, 221, 400	Bechtel
egal t'd'rs	14,887,200	15,048,000			Bonanza C
ot reserve	80,736,800				Boston C
eposits	307,718,100	286,447,300			Bull Dom
eserve re-	3-11/1				Bodie
quired	76,929,525	71,636,875	Dec.	5,992,700	Boulder
urplus	3,807,275	1.485.375	Dec.	2,331,000	Calaveras
irculation.	18,250,500	16,181,600	Dec.	3,077,000	Cale. B. H
or organica oraș	1-2913			-1-111300	California
	POREIGN	IMPORTS.			Climax Consolidated Virginia
		970 9	-0		Compositioned vinginia.

For the week ended February 26:

	Rouldon	0.0	
00	Boulder	45	
00	Calaveras		
00	Cale. B. H.		
	California		
	Climax	54	
	Consolidated Virginia	1.45	
	Consolidated Pacific		
	Chrysolite	5-75	-
	Dunderberg,	1.10	
16	Dahlonega	7	
19	Durange		
-	Dunkin	1.50	
5	Findley	28	
	Fa. DeSmet		3
-	Great Eastern		
3	Gold Stripe	2.90	
d	Goodshaw	49	
	G. Prize	1.05	
	Granville	4	
В.	Green Mountain	634	
B.	Green Mountain	1.40	
	Green Mountain	8.40	1
7	Green Mountain. Hukill Horn Silver. Independence.	30	3
57	Green Mountain Hukill Horn Silver Independence Iron Silver	30 3.50	3
7	Green Mountain. Hukill Horn Silver. Independence.	30 3.50	3
19 15 18 15	Green Mountain. Hukill	30 3.50 27	3
9 5 8 5 5	Green Mountain. Hukill Horn Silver Independence Iron Silver Lacrosse Lucerne Little Pitts.	30 3.50 37 9 3.70	3
19 15 18 15	Green Mountain Hukill Horn Silver Independence Iron Silver Lacrosse Lucerne Little Pitts Mariposa	30 3.50 27 9 3.70 4.00	3
9 5 8 5 5	Green Mountain Hukill Horn Silver Independence Iron Silver Lacrosse Lucerne Little Pitts Mariposa Mar. Pref	30 3.50 27 9 3.70 4.00 4.75	3
5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Green Mountain Hukill Horn Silver Independence Iron Silver Lacrosse Lucerne Little Pitts Mariposa Mar, Pref. Moose	30 3.50 27 9 3.70 4.00 4.75 1.70	3
9 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Green Mountain Hukill Horn Silver Independence Iron Silver Lacrosse Lucerne Little Pitts Mariposa Mar. Pref Moose Moose Silver	30 3.50 27 9 3.70 4.00 4.75 1.70	3
5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Green Mountain Hukill Horn Silver Independence Iron Silver Lacrosse Lucerne Little Pitts Maripossa Mar. Pref Moose Silver Maybelle	8.40 30 3.50 27 9 3.70 4.00 4.75 8.70 3 30	3
15 15 15 15 15 15 15 15 15 15 15 15 15 1	Green Mountain Hukill Horn Silver Independence Iron Silver Lacrosse Lucerne Little Pitts Mariposse Mar. Pref. Moose Moose Silver Maybelle Navajo	30 3,50 27 9 3,70 4,00 4,75 1,70 3,30 15 2,00	3
57 19 15 18 15 15 15 15 15 15 15 15 15 15 15 15 15	Green Mountain Hukill Horn Silver Independence Iron Silver Lacrosse Lucerne Little Fitts Mariposs Mar. Pref Moose Moose Silver Maybelle Navajo N. Y. & C.	30 3.50 27 9 3.70 4.00 4.75 1.70 3.30 15 2.00	3
57 19 15 18 15 15 15 15 15 15 15 15 15 15 15 15 15	Green Mountain Hukill Horn Silver Independence Iron Silver Lacrosse Lucerne Little Pitts Mariposa Mar. Pref Moose Moose Moose Silver Maybelle Nayajo N Y & C North Stan	30 3.50 37 9 3.70 4.00 4.75 1.70 3.30 15 2.00	3
57 19 15 18 15 15 15 15 15 15 15 15 15 15 15 15 15	Green Mountain Hukill Horn Silver Independence Iron Silver Lacrosse Lucerne Little Fitts Mariposs Mar. Pref Moose Moose Silver Maybelle Navajo N. Y. & C.	30 3.50 37 9 3.70 4.00 4.75 1.70 3.30 15 2.00	3

R. Sun.... Robinson... South Hite S. Bulwer. Silver Cliff

Sutro... Spr'gVal. Tioga... Tip Top.. Tuscarora

GENERAL HARDWARE.

Although the weather during the week had little or no effect on business, which is steadily increasing in volume. The general trade, it is expected that the prices of a few lines of goods, which, at the moment, are unsettled, will be fixed for the season on a basis more satisfactory to both buyer and agents. seller than is the case at present.

The prices of Cast Butts are in the same unsettled condition as noted last week.

In foreign Hardware nothing of special interest is reported-business, although not so active as in domestic Hardware, is fair, considering the season.

M. J. Woodruff, assistant treasurer of Russell & Erwin Mfg. Co., sailed for Europe this morning in the steamship Gallia, of the Cunard line. He will be absent, it is reported, about three months.

The Atlantic States Nail Manufacturers Association held a meeting in this city on Tuesday last, when the price of 10d. to 60d. was advanced to \$3.10, subject to an allowance of 10 cents per keg for car-load lots. The tone of the market is firm and the de mand fair. We print below the new card :

CARD RATES FOR CUT NAILS, ADOPTED MARCH King I, 1881.

Common, Fence	and Sheathing.
Per keg. 10d to 6od. \$3,10 8d and 9d. 3.35 6d and 7d. 3.60	4d and 5d 3.83
Coopers', Slating, Tobacc Gripe	co, Warehouse and Edge Fence.
Per keg. 10d and larger \$3,60 8d 3.85 6d and 7d 4 10	4d and 5d \$4.39
Spikes of all sizes	\$3.35
Box and	Flooring.
Per keg. rod and larger \$3.85 8d 4.10	6d and 7d \$4.35
Bradhead o	r Finishing.

Bradhead or Finishing.				
rod and	Per keg. larger \$4.10	6d and 7	Per keg.	
Fine	Finishing, \$1.25 com	a keg abo mon.	ve same size	

Clinch	Nai	la.	
Per keg. 3 in. and larger \$4.60 21/2 and 22/4 inch 4.85 2 in. and 21/4 in 5.10	13/4	Inch	Per keg \$5.3 5.6
Graham & Haines, quote "Geneva" H			

Metal, at \$12 per dozen, discount 25 per

cent. This reduction went into effect on the 1st instant. Horace F. Sise, No. 100 Chambers street, agent for Barnes Mfg. Co., New Haven, Conn., has issued a circular illustrating their "Improved" Rim Night Latches, Horse Shoe Padlocks, &c. The following are the

list prices of these goods:

IMPROVED RIM NIGHT LATCH. Size, 4½ x 2%. Heavy Japanned Iron Case, Bronze Draw-back and Turn Stop Knobs, Swivel Es-cutcheons with Japanned Base and Bronze Key

	Guide.
	Per do
	No. 120, With Improved Striker \$18.6
	No. 121, " Plain "
	No. 121, " Reverse Bevel Striker 18.0
	Any of above Latches with Bronze Escutch-
,	eons, add to List
-	Any of above Latches with Plated Escutch-
1	
í	
ė.	Keys " 120, 121, 122 2.4
6	Latches packed one in a box. Blanks and Keys
	3 dozen in a box. Discount, 35 per cent.

HORSE-SHOE PADLOCKS.

Bid. Asked. attention.

count is same as heretofore.

MANILA ROPE. 1½ inch cir. and upwards... 12 thread, or ½ diameter... 6 and 9 thread, or ½ and 5-16 Hay Rope. 2, 3, 4 or 5 thread. Bolt and Point Rope...

Tarred Rope and Lath Yarn	14
Stave Meather and Hop Lwme	
SISAL BOPE.	
	Cts. W D.
134 inch cir. and upward	31 1/2
12 thread, or %-inch diameter	13
6 and 9 thread, or 1/4 and 5-16 diameter	12 19
Hay Rope, 2, 3, 4 or 5 thread	
Tarred Rope and Lath Tarn	

In an advertisement on the opposite page, to which we invite attention, S. H. Jennings offers to send his discount books by mail to intending purchasers for examination.

George Griffiths, proprietor of Keystone Works, Philadelphia, has issued, under date of the 1st instant, an illustrated catalogue and price-list in which he shows, in additton to the large assortment of Shovels, Spades and Scoops manufactured by him, a good line of Galvanized and Japanned Coal Hods, and Pokers, Stove Pipe and Elbows, Coffee Roasters, Tin Wash Boilers, Sheet Iron Roll, Pudding and Bread Pans, Galvanized Ash Barrels and kindred goods.

30 is shown their latest improvement in £5. 15/.

sists of an iron ferrule made with double under review has been unfavorable, it has bearings, an iron tube, fitted to the shank

and resting against the lower bearings, rigidly held in position by the handle and tone of the market is steady, and, with nut, which, they claim, effectually premore open weather to further stimulate vents back thrust of ferrule. A sectional view of this device is shown in the advertisement referred to. Durrie & McCarty No. 97, Chambers street, are their sole

Screw Wrenches. This improvement con-

We have received the following circulars:

Sole Agency,
Joshua Wilkinson & Sons,
Dudley, England,
Philadelphia, March 1, 1881.

To the Hardware and Iron Trade.—Gents: We have established a depot for Wilkinson's goods at 83 Maiden Lane, New York, from which the trade will be supplied in New York and the New England States, and have York and the New England States, and have appointed Thomas S. Newlin our sole agent for this territory. Deliveries from the Middle, Western and Southern States will be made from Philadelphia, or shipments in quantities direct from Liverpool. As it is our intention to establish supply depots and agencies in the principal cities of the West and South we invite tenders for the West and South, we invite tenders for such agencies from merchants dealing largely in Anvils, Vises and Hammers.

NEWLIN & YARDLEY, Philadelphia, Sole Agents for the United States.

PHILADELPHIA, February 26, 1831. We wish to call attention of the trade to our circular dated December 22, 1880, regarding one of our patents in Lawn Mowers, the same also published in The Iron Age, under date of December 30, 1880. It will be no excuse to us for the trade to say they day't heavy what Lawn Mowers they don't know what Lawn Mowers the patent covers; that is their business, and they must look to it. We will send a duplicate of our circular to any one interested who will apply for it, but our rights will be protected. As only two manufacturers have as yet settled with us, we refer other manufacturers (who are infringers), as well as all who are selling infringing Mowers, to our circular.

LLOYD, SUPPLEE & WALTON.

REMOVAL,

MARCH 1, 1881. Having completed our removal into much more commodious quarters, which the large increase of our business has rendered neces-sary, we shall have pleasure in seeing any of our many friends at our new address, as below. We would say that our stock of Hardware and Cutlery, including among others the following brands—Geo. Wostenholm & Son, Joseph Rodgers & Son, Wade & Butcher, Tyler & Co., Irving Mfg. Co., Wade Bros., &c., will be maintained fully up to its accustomed standard, and while thanking our friends for past favors, we shall hope to receive their future orders, which, with our present facilities, we shall execute with assurance of satisfaction.

McCoy & Sanders,

43 Chambers street, New York.

WASHOB MANUFACTURING Co., NEWARE, N. J., March 1, 1881.

GENTS: The Manufacturing business herehaving been incorporated into one concern under title of Washoe Manufacturing Co... the business will be continued at the old stand, 220 Market street, under above name.

A. Marshall, Agent.

In Machinists' Supplies there is still much activity, more especially among those firms well connected with parties concerned in railroad equipment. The Tehuantepec Railroad Company have been ordering quite placed. Through the same influences affectmostly for enlarged and remodeled shops, pressure felt more or less through a wide

BRITISH IRON MARKET.

[Special Report by Cable to The Iron Age.]

and prices are weak. Quotations show a decline from last week's figures of 1/on Coltary, only 100 tons, and to England, 250; from Australia to England, 500 tons. Our ness and Glengarnock, and 6d. on Gartsherrie and Eglinton. The following are makers' quotations :

Gartsherrie

Staffordshire Bars are quoted £7 @ £7. 5/.

We invite attention to the advertisement of L. Coes & Co., on page 27, in which steady demand. We quote Welsh £5. 10/@ not undergone such marked and violent fluc-

Old Rails,-Sales have been small, with ight offerings. The price of Old Ts has been reduced 2/6, present quotation being £4. 7/6.

Scrap.-The offerings have been moderate during the week, with fair sales. Prices are weak. Wrought is quoted £4. 5/-a reduc-

American Pig.-The business transacted in Pig Iron during the week was light, and although there is no sign of weakness, the market is dull, and is not even relieved by a fair amount of inquiry. No sales worthy of mention are reported here, although we hear of some good sized transactions at Albany and Troy in No. 1 Foundry, the particulars of which have not transpired; the price, however, is said to have been below our quotations, and the Iron a New York State brand. We learn that some of the Lehigh companies are asking \$26.50 for No. I Foundry, but, except in a very small way, it is doubtful whether any business could be done at that figure. We continue to quote Foundry No. 1, \$25 @ \$26; Foundry No. 2, \$22 @ \$23 ; Gray Forge, \$20 @ \$21.

Scotch Pig.-Business in this branch of the Iron trade is light. A sale is reported of 200 tons Summerlee, said to be at about \$24. Prices on the other side of the water are a trifle lower this week than last, but the decline is not likely to affect values here, as it is more than offset by the recent advance in ocean freights, the tendency We quote : of which is still upward. Eglinton, \$22 @ \$22.50; Carnbroe, \$22.50 @ \$23; Coltness, \$24.50 @ \$24.75; Glengarnock and Gartsherrie, \$23 @ \$23.50.

Rails.-There is abundant inquiry for Steel Rails for earlier deliveries than American manufacturers can undertake, and, in consequence, considerable business is transpiring in foreign. We hear of sales of English Steel amounting to between 8000 and 9000 tons, at about £7. 5/, c. i. f., equivalent to \$63 @ \$64 here. Iron Rails are also in fair demand, and sales of 3000 tons 40 lb. (foreign), to arrive, at \$47.50, and 1000 tons light Rails at about \$49@ \$50 are reported. We quote nominally, Steel, at mill, \$60 @ \$62, and Iron Rails, \$48 @ \$50.

Old Rails.—The apathy which seems to pervade this department of the Iron business is not easily accounted for. The buying element seems for the moment to have retired from the market; offers are few, and these name figures that holders cannot afford to entertain. The effect of this long-continued holding off on the part of consumers is depressing, and prices are a shade lower for spot lots than at our last writing. Old Ts. are quoted \$27.50 @ \$28, and D.H. \$28.50 @ \$29. The only transaction results of 500 tons doubles at \$29. The only transaction reported is a

Scrap.-The demand for wrought scrap during the week was active, and sales aggregating 1550 tons, from store, at \$30, are gating 1550 tons, from store, at \$30, are tofore conducted by John J. Anderson, under title of Washoe Tool Co., and the business of Manutacturers' and Machinists' Supplies, conducted by A. Marshall, agent to a Southern port on private terms. We quote No. 1 Wrought, from for John J. Anderson, at 220 Market street, yard, \$30 @ \$31.

METALS.

Copper.—The market here during the week under review has been moderately active, sales aggregating 200,000 to 250,000 lbs. Lake Superior, at 19¼¢ @ 19½¢, and being held close at the outside figures, while Baltimore is 18¼¢. London cables Chili Bars £61. 10/ and Best Selected £68. 10/, road Company have been ordering quite showing a decline. News from the West heavily for some time, so that there is a reflex influence, from which those who supply the peace. "London, Feb. 12.—We have again end.

Russell & Erwin Manufacturing Co., in largely benefit. The unprecedented demand in this market, while there is hardly any their advertisement, page 10, show some handsome patterns of Knobs, Sash Lifts, &c., in "Kahala" Bronze. Among their handsome poods is presented a Bronze Face Sliding Door Lock, No. 334, showing an improvement in the locking device for this themselves on having received large orders. sked.

sked.

style of lock which is worthy the notice of the trade, and to which we invite little speculation as to where they can be attention.

Slaing Door Lock, No. 334, showing an tain commission agents are congratulating proofs of the continued increase which is themselves on having received large orders being made in the bona fide demand, is the favorable Board of Trade returns for last month, which show the total exports for that time to be 77,224 tons, against 61,965. tons for the same month last year, and 61,189 tons in January, 1879. This great We print below revised prices for Manila ing the trade at large, machinists, like Sollard Sisal Rope adopted by the manufacturers on the 24th ultimo, showing an advance of ½ cent per pound. The trade distribution is a smany as 140 Planers ordered, this line has as many as 140 Planers ordered, that the demand has been thereby stimutible and the prices are so extremely moderate that the demand has been thereby stimutible. lated, and as it does not seem at all likely mostly for enlarged and remodeled shops, which fact will serve as an indication of the pressure felt more or less through a wide circle. For instance, manufacturers of mand continuing to develop." Manufactures Axles, Wheels and other running gear have their hands full, as well as those who furnish the crude materials.

main continuing to detector.

remain as under: Bottoms, 29¢; Braziers, according to size, 28¢ @ 34¢; Circles, 31¢ according to size, 28¢ @ 34¢; Segment Sheets, 31¢; Pire-box Sheets, 28¢; Sheathing, 26¢, and Bolt Copper, 28¢.

Tin.—There has been no material change in prices, but the market closes firm. Lon-don cables Straits, £38, and Singapore, £91, Scotch Pig.—There is but little demand and prices are weak. Quotations show a total stock in importers' and dealers' hands March I was 3000 tons, and adding thereto 700 tons afloat, this constitutes a visible59/6 supply of 3700 tons. As no Tin is due here would show, between stock and afloats, an amount of Tin equal to about four months' Manufactured Iron.—The market is dull, consumption, at the rate of absorption at with weaker prices and small demand. Best present generally adopted, to be as near the truth as can be conveniently ascertained. We quote at the close, with an upward ten-Steel Rails-Are steady, with a moderate dency : Straits Tin, Australian and Billiton, business doing. Prices are steady. Ordinary large lines, 1936 @ 20\$. "London, Febsections are quoted £6. 10/@ £6. 15/.

The state of the steady of the state of t tuations as have generally occurred in the

previous few weeks, but, on the whole, have manifested a somewhat easier tendency, and, although at the opening on Monday there appeared good promise of vitality in the demand, buyers have not followed up the market, and hence the cause of the slight reaction in prices; but at the same time there appears to be too much interest at stake in the maintenance of the market to allow it to fall away to any material extent. For some time past, when ever any material drop has taken place, fresh buyers have come forward and given support to the market, which is not unlikely to recur again should any further decline be effected. On Monday the official quotation effected. On Monday the official quotation for cash parcels of foreign was £90. 5/@ £90. 10/, and on Tuesday and Wednesday £89. 15/@ £90, while yesterday £89. 5/@ £89. 10/ was quoted, and the market closes to-day at £89, £88. 10/ having been touched in course of the day." Tin Plates,—The quiet state of affairs which has characterized the greenel Match market during the week the general Metal market during the week under review has been reflected by Plates. Amidst light dealings we quote large lots, ordinary brands, per box: Charcoal Bright, \$5.75 @ \$6.25; ditto Ternes, \$5 @ \$5.37½; Coke Tin, \$4.90 @ \$4.95, and ditto Ternes, \$5. Liverpool fluctuates between 15/ and

Lead.—This has been a dull and de-pressed week in common Lead, sales amount ing to 300 tons in lots at \$4.80 @ \$4.82 ½ and 500 tons in one lot at \$4.82½. There and 500 tons in one lot at \$4.82 ½. There nevertheless seems to be a feeling that an early spring season may stiffen prices. Refined may be quoted 5¢. "London, February 12.—During the week this market has remained very dull, the demand for all desirable process." remained very dull, the demand for all descriptions continuing languid, but prices keep steady, perhaps owing to sellers being of opinion that reduced rates would not materially stimulate business, as there is a marked scarcity of inquiries." Manufactures are quoted as follows: Sheet Lead, 7¢; Lead Pipe, 6½¢; Tin-lined ditto, 15¢, and Block Tin Pipe, 40¢.

Spelter aud Zine .- Common domestic Spelter has followed in the wake of the genspetter has followed in the wike of the general decline in metals, and we cannot now quote it any better than 5¢ @ 5½¢, while Silesian is nominally worth 5½¢ @ 5½¢; Sheet Zinc is worth 7¢. "London, Feb. 12. —This market keeps very tranquil; nevertheless, prices are maintained, and at times have shown symptoms of firmness. At the zinc sale yesterday 85 tons were sold at £19. 15/@ £19. 17/6 per ton."

Antimony.—No further change has oc-curred; we quote the same as per brand, 141/2 € @ 15 €.

OLD METALS, PAPER STOCK, &c.

The purchasing prices offered by dealers are as follows:

Copper, heavy \$\mathbb{B}.	\$0.16	0	\$0.17
Copper Bottoms	.14	0	.14%
Yellow Metal	.00	63	.00%
Brass, heavy	.II.	6	.12
Brass light	.00	0	.09%
Composition, heavy "	. 1356	6	. 3456
Lead, heavy	.04	63	
Tea Lead "	.03%	0	
Zinc "1	.0334	0	.03%
Pewter, No. 1	.14	6	.34%
Pewter, No 2 "	.08	63	.00
Wrought Iron 19 ton	34.00	0	25.00
Light do	11.00	0	12,00
Stove Plate	13.00	0	14.00
Machinery do "	16.00	@	17.00
Grate Bars	8,00	0	8.50

The prices current for Rags, &c., are as

follows:	
Canvas, Linen D D	
White Cotton, New "	316c. @
14 No. 2	2%c. @
White, No. 1 "	4%c. @ 4%c.
" No. 2	2%C. @ 3 C.
Seconds "1	1%c. @ 1%c.
Soft Woolens	10C. @ 11C.
Mixed Rags "	sc. @ 216c.
Gunny Bagging "	13/4 C. @
Jute Butts"	sc. @ 2%c.
Kentucky Bagging "	3C. @
Book Stock	2%c. @ 2%c.
Newspapers"	11/2 @ 11/4 C.
Waste Paper and Scraps "	%c. @ %c.
Kentucky Bale Rope"	4C. @

COAL.

The Anthracite and Bituminous Coal trade The Anthracite and Bituminous Coal trade has undergone but slight change since our review of one week ago. Trade all through is very quiet, awaiting better facilities for transportation, both from the mines and along the seaboard. Retailers and consumers manifest a disposition to provide themselves only so far as necessary for immediate requirements, and for this reason. mediate requirements, and for this reason the supplies at ports of shipment move off sluggishly. The continued high rates of sluggishly. The continued high rates of freight to Eastern points also operate to check a free movement, but vessels are in gradually better supply with the return of a milder season. The executive committees of the Lehigh and Schuylkill Coal exchanges decided to make no change in current circular prices of Coal for the month of March, as the stocks of Coal on hand are low. It was thought that full production will continue throughout the coming month, as there is a demand sufficient to prevent any accumula-The impression, therefore, is that no special change is in prospect for some time to come, though it is suggested by those most familiar with the trade that the interests of all concerned would be best served by fixing upon the spring schedule about the middle of the present month. The complaint of a scarcity of cars, heard for some weeks past, still continues through most of the Anthracite regions.

In Bituminous Coal there is no improve ment, either as respects the amount of Coal available or the orders for consumption, full tonnage is anticipated at no distant future. The feeling is somewhat in the nature of suspense, pending the expected action of the railway companies in announcing their rates of transportation for the spring opening; until this event, there can be no stable basis for operators upon which

to arrange their contracts. The total tonnage of anthracite coal from all the regions for the week ending Feb-ruary 19, as reported by the several carrying companies, amounted to 574,350 tons, against 291,138 tons in the corresponding week last year, an increase of 283,212 tons. The total amount of anthracite mined for the year is 3,079,795 tons, against 2,706,180 Konigsberg. Clocks tons for the same period last year, an in Ptlm., gals.11,500 10,215 Hdw., cs

crease of 373,615 tons. The quantity of bituminous Coal sent to market for the week amounted to 88,907 tons, against 70,749 tons in corresponding week last year, an increase of 18,158 tons. The total amount of bituof 18,158 tons. The total amount of bituminous mined for the year is 502,976 tons, against 626,987 tons for the corresponding against 020,987 tons for the corresponding period last year, a decrease of 124,011 tons. Clearfield is quoted at Baltimore \$3.75: at New York, \$5.25. For anthracite, at Hoboken, the prices are: Lump and Grate, \$4; Egg, \$4.20; Stove, \$4.45; Chestnut, \$4.10. Freights 70 cents to New Haven, \$1.25 to

Providence, \$1.60 @ \$1.75 to Boston.

Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the Week ending March 1, 1881:

EXPORTS

Danish West Indies	. Busser.
Quan. Val Ag. imp., pkgs 6 \$7. Mf. iron, pkgs 177 44	Quan. Ptlm.,gals.135,610\$
Ptim., gals3511 29	
Gothenburg.	
Ptlm., gls. 138,277 13,00	Mf. iron, pkgs. 595 Ptlm., gals6224
Arendal.	Mach'y, pkgs. 82
Ptlm., gals. 149,709 14,310	Cutlery, pkgs, 180
	Sew. ma., cs. 273 Revolvers, cs. 7
Danzig. Ptlm., gals.136,789 12,000	I. R. goods, cs. 10
Hamburg.	Iron, pkgs 38
	Zinc, casks 5
Ptlm., gals.812,225 71,503 Mf. iron, pkgs 16 457 Brass gds., cs. 2 123	Tinplate, bxs. 20
Wringers 9 220	
Mach'y, cs 11 2,352	Pistols, case z
Ag. imp., pkgs 326 9,184	Bronzes, case. z
Sew. ma., cs. 203 2,848	
Hdw., cs 91 1,466	
E. wheels, bxs 2 217	
Clocks, bxs 31 1,241	
Bremen.	Ag. imp., pkgs 13
Ptlm., gals.974,082 78,470	Iron tubes 47 Rifles, cs 53 I
Mf. iron, pkgs 2 36	Iron tubs 3
Hdw., cs 14 250	
Ag. imp., pkgs 290 9,975	
Rotterdam.	Hdw., cs 4 Ag imp., tpkgs 6
Ag. imp., pkgs 23 1,225	
Hdw., pkgs 4 144	
Cutlery, cs 2 132	Tut-
Pumps, pkge. 1 16	Ptlm., gals8e,400
Dutch West Indies.	
Nails, kegs 21 83	Ptim., gals 600
Ag. imp., pkgs 8 40	Mr. from hage o
Ptlm., gais2,412 306	Sew. ma., cs 3
Anchors 8 42	Mach'y, cs 3 Hdw., cs 5

Tinware, cs. Antwerp. British Bonduras. Ptlm., gals. 366,942 32.400 Cutlery, cs... 15 Ptlm., gals...10,732 Nails, kegs... 18 Mach'y, cs.... 2 Mf. iron, pkgs 9 1,381 Hull. Windlass..... 3 Hdw., cs.... 24 Tinware, cs... 3 Mf. iron, pkgs 6 Ptlm., gals.128, Hdw., pkgs... Ag. imp., pkgs gals, 128,800 12,558 12 909 170 Bordeaux.

Liverpool. Ag. imp., pkgs 6 Sew. ma., cs.. 51 Alicante. Ptlm., gals. . . . 2000 Feneruela. Hdw., cs..... 18 Ptim., gals....7500 Mach'y, cs.... 20 Cutlery, case. 1 London. Hdw., pkgs... 153 Brazil. Clocks, bxs... 38 Cutlery, pkgs' 43 Iron safe... 1, Revolvers, cse 7 Ptlm., gals. 298, 022 Mach'y, pkgs. 127 Hdw., pkgs... 934 Sew ms. cs. 23 Hdw., pkgs. . 934 Sew. ms., cs. . 21 Mf. iron, pkgs . 34 Pumps, pkgs. . 14 Ag. imp., pkgs . 10 Leith.

Ag. imp., pkgs 11 1,000 Gibraltar. Ptlm., gals. 137,475 12,366 Oporto. Malta. Clocks, bxs... 27 43 Ptlm., gsls.223,660 23,35 Ptlm., gals..81,000 9,510 Tarragona. Hayti. Ptlm., gals.214,075 20,161 British Australia. Mf. iron, cs... 3 Glasgow.

Mf. iron, pkgs. 7 577 Mach'y, pkgs. 8 1,094 Hdw., cs..... 12 269

1	British North Amor	Mexteo.			
	ican Colonies.	Mach'y, pkgs. Ptim., gals20	132		
	Hdw., pkgs 6 Ptim., gais12,873 1,6	Mf. iron, pkgs Pumps, pkgs.	189		
1	British Possession	Nails, kegs Grindstones	136		
ı	in Africa.	Per. caps, cs	6		
The same of the sa	Pumps, pkgs. 12 4/9 Ptlm., gals. 27,040 4/3 Clocks, case. 1 5 8cales. 5 9. Hdw., pkgs. 360 9. Ag. imp., pkgs 24 4/3 St. Marseilles. Ag. imp., pkgs 14 60 Ag. imp.	Tinware, cs Sew. ma., cs Hdw., pkgs Nails, bxs Cutlery, bx Carbines, case Fire arms, cs.	5 35 29 5 47 189 3 37 1 6		
į	Sew. ma., cs 101 1,20	Ag. imp., pkgs	32		
ı	British West Indies	- I B goods os	3.2		
l	Nails, kegs 158 50 Sew. ma., cs 20 38	Tacks, cs	7		
ł		4 Cuba.			
	Mach'y, cse 1 8	Nails, bxs Mf. iron, pkgs Hdw., pkgs Nails, kegs	12 366 111 50		
ı	Charten	Mach m whee	-		

f. iron, pkgs. dw., pkgs... Iron, pos..... 107
Mach y, pkgs. 25
Ag, imp., pkgs. 25
Tubes, bxs... 2
Pumps, pkgs. 7
Sew. ma., 08. 29
Ptlm., gals., 37,647
Scales, pkgs. 6
Tacks, cs. ... 7 Bilbao. Ptlm., gals. 114,880 Nails, kegs... 12 Cadiz. Ptlm., gals..40,000 Hdw., cs..... 4 Porto Rico. Harre. Ptlm., gals...17,168 Sew.ma., cs... 30 Clocks, cs.... 9 Iron rails, t'ns 14 Mach'y, pkgs. 6 1,725 Ag. imp., pkgs 45 3,379 Barcelona. Mach'y, cs.... 12 Hdw, cs.... 29 Mf. iron, pkgs 26 Cutlery, case. 1

Fiume. Piraus. Ptlm., gals.278,038 25,50 Ptlm., gals. 206,400 24,262 Uruguay. French West Indies. Hdw. cs..... 109 2,075 Clocks, case. 1 28 Nails, pkgs... 12 200 100 sefes. 2 500 Ptlm. gals. 130,000 14,475 Sew. ma., cs. 55 1,005 Ag, imp., pkgs 274 5,939 Ptlm., gals....3200 390 Argentine Republic. Hdw. cs. 134 3,072 Ag. imp., pkg8 175 4,563 Cutlery, cs. 3 866 Mach y, case 1 308 Ptlm., kls. 47 000 5,930 Nails, pkgs. 31 534 Br. gds., case 1 43 China. I. R. gds., pgs. 4 Wash mach . 1 [Lillenand. Iron safe.... 1 Brass tubes... 12 Ptim, gals.627,330 Clocks, cs... 100 Ptlm., gals. 159.957 15,210

Konigsberg.

IMPORTS

Steel.

Brown, Sinpley & Co.
Blooms, 455
Brown Wm.
Steel, bdls., 112
Drexel, Morgan & Co.
Blooms, 64
Duval H. R.

Cases, 2
Bundles, 10
Woodford W. O.
Bundles, 563
Bars, 94
Cases, 15
Order,
Casks, 15
Cases, 25
Bundles, 1342
Blooms, 2072

Blooms, 2072
Tubes, 15
Rail ends, tons, 500
Rods, bdis., 1843
Steel rails—lot
Wire rods, pgs., 2211

Metals.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending March 1, 1881:

Patterson, Wm.
Pig, tons, 350
Williamson Jas. & Co.
Pig, tens, 200
Order,
Ore, tons, 2002½
Pig, tons, 951
Wire rods, bdis., 6484
Swedish iron, bars, 4
Spiegel, tons, 370
Spiegel, kilos, 384, 200
Old rails, 1453
Scrap iron, tons, 200
Crop ends, tons, 40
Wire rods, pkgs., 740 Aspinwall T. & Son, Files, csks., \$8 Brown Wm. Brown Wm.
Box, t Bassett G. F. & Co. Hhds., 12 Crates, 4 Cask, 1 Burkinshaw W. C. Cases, 2 Boker H. & Co. Hdw. & cut., pkgs., Title Curley J. & Bro.
Pkge., 1
Drexel, Morgan & Co.
Arms, pkgs., 36
Steelware, pkgs., 12
Folsom H. & Co.
Gases. 2 Allen Paper Car Wheel Co.
Bands, 124
Brown Bros. & Co.
Wire rings, 7118
Packages, 123
Brown, Shipley & Co.
Blooms, 455

Bardware.

Frasse & Co. Pkge., 1 Field A. & Co. Field A. & Co.
Pkgs., 43
Anvils, 75
Chains, caks., 25
Hartley & Graham,
Guns, cs., 7
Case, 1
Howard, Bros. & Read,
Pkgs., 50
Krause & Hahn,
Whetstones, rolls, 84 12,920 Co-Steel bands, 106
Lee Jas. & Co.
Blooms, 905
Moss F. W.
Bundles, 54
Bars, 16
Prosser Thos. & Sons,
Bars, 60
Cases, 2 Krauss & Hann, Whetstones, rolls, whetstones, pgs, 36 Whetstones, pgs, 361
Mount Jas.
Pkgs., 2
Merchants' Dispatch Go.
Gun caps, case, 1
Moulsen John,
Pkgs., 5
Moore J. P.
Arms, cs., 3
Navy Department,
Arms, cs., 43
Pim. Forwood & Go.
Cases, 20
Peters & Bro.
Steelware, cs., 8 Steelware, cs., 8 Ranft Richard,

Ranft Richard,
Ironware, cs., 17
Struller, Lau & Co.
Arms, cs., 10
Schoverling, Daly &
Gale,
Arms, cs., 41
Taylor Thos.
Pkgs., 2
Tillotson L. G. & Co.
Wire, lots, 215
Pliers, csk., 2
Vom. Cleff & Co.
Pkgs., 4
Windmuller L. & Rolker,
Arms, cs., 12 Byrne Jos. & Co.
Tin plates, bxs., 550
Baring Bros. & Co.
Tin plates, bxs., 294
Bruce & Cook,
Tin plates, bxs., 193
Bolsells & Co.
Old copper, bxs., 35
Behnn, Myers & Co.
Tin slabs, 2007
Canadian Bank of Commerce,
Tin slabs, 282 Windmuller L. & L Arms, Cs., 12 Wood Eliphalet, Mach'y, Cs., 1 Ward Asline, Pkgs., 13 Woodford W. O. Woodford W. O. Anvil, I Wiebusch & Hilger Hdw. Co. Cut. & hdw., pgs., 54 Witte J. G. & Bro. Cutlery, ca., 8 Sheep shears, csk., I

114

335

Mexico.

Order, Cases, 8 Auvils, 60 Mach'y, cs., 28 Gun barrels, cs., 7 Pkgs., 105 Baring Bros. & Co.
Pig. tons, 725
Brown Bros. & Co.
Ore, tons, 600
Bornstorff & Co.
Cast iron, ibs., 30,00
Greisenheimer & Co.
Spiegel, tons, 400½
Irwin Richard & Co.
Pig. tons, 240 Iron.

Canadian Bank of Commerce,
Tin slabs, 380
Heroy & Marrener,
Tinfoil, cs., 11
Tin, cs., 2
Leayeraft & Co.
Uld metal, csks., 9
Brass tubes, 9
Brass, cs., 3
Copper, cs., 1
Old copper, pkgs., 6
Laidlaw & Co.
Lead, bars, 1144
Merchants' Dispatch Co.
Old gun metal,
csks., 5
Meriden Britannia Co.
Metal package, 1
Phelps, Dodge & Co.
Tin plates, bxs., 3724
Taggers, bxs., 301 Taggers, bxs., 201 Spelter, plts., 1916 Patterson Wm. Tin plates, bxs., 250 Semon, Bache & Co. Irwin Richard & Co.
Pig, tons, 250
Leaycraft & Co.
Old iron, tous, 100
Leo James & Co.
Pig, tons, 200
Lundberg Gustaf,
Bars, 100
Lang W. Bailey,
Bars, 549
Milliken & Smith,
Wire, bdls., 435
Nevada Bank of San
Francisco,
Pig, tons, 250 Semon, Bache & Co.
Tin, Cs., 17
Winter, De Visser & Co.
Tin, slabs, 1698
Windmuller L. & Rolker,
Zinc, csks., 37
Zekendar L. & Co.
Copper, bars, 961
Order. Copper, bass, 31,248
Old brass, csks., 12
Tin, ingots, 188
Lead, bars, 3og
Copper, bars, 8
Tin, slabs, 2360 Pig, tons, 250

PHILADELPHIA. Office of The Iron Age, 220 South Fourth St., PHILADELPHIA, March 1, 1881.

Pig Iron.—The market shows symptoms of improvement; a larger business than usual has been done during the week, and con-sumers are disposed to buy heavily at recent quotations. A considerable number of good sized orders have been entered, but holders, especially of favorite brands, are now generally either out of the market or asking more money. Iron can still be had at the old prices, but not the same brands, with per-haps one or two exceptions. Foundry No. 1 is held firm at \$25 @ \$26.50, and a large business has been done at \$25.50 @ \$26. Some very fair Iron can be picked up at \$25, which is probably a bottom figure for any brand of ordinary repute. No. 2 is steady at \$22 @ \$22.50; some parties ask more, but sales have not been important. Gray Forge sales have not been important. Gray Forge has been very active, and leading furnaces are sold ahead almost as far as they care to be for the present. From the number of inquiries coming in, it is likely the demand will be large for some time to come, so that anything in the nature of a decline or weak-ness in prices is not thought of. There is some difference of opinion, however, in regard to an advance. Apart from foreign markets, there is no doubt that considerably higher prices could be realized, but so long as useful Iron can be profitably imported at \$20 @ \$25, attempts to push prices beyond their current level are not likely to be per-manently successful, although there can be no question as to the perfectly healthy condition of our market at present. With an unprecedented production of more than 4,250,000 net tons, and imports swelling the total supply during 1880 to about 5,000,000 tons, prices have stiffened and stocks de-creased. The outlook as regards consumption is even more promising to-day than it was a year ago, but the productive capac-ity has increased in still greater proportion. In this connection, quoting the remarks of Mr. James M. Swank in the Bulletin of the Iron and Steel Association, Bulletin of the Iron and Seed Association,
"the year 1880 was a very active one in
the line of furnace construction. No less than
28 furnaces were built in the United States;
23 more were begun; I furnace long aban-28 furnaces were built in the United States; 23 more were begun; I furnace long abandoned was revived; and innumerable others were rebuilt or supplied with new and improved appliances to secure increased productoin and greater economy of fuel. At present we have knowledge of 14 projected furnaces, nearly all of which are sure to be built, and there are doubtless others under considerations are when the sure to be salf full, atthough a few hundred toos might, perhaps, be spared once in a while. We have not heard of any new transactions, and it is probable that parties are waiting further developments. For winter delivery quotations are still about \$60, and it is probable that parties are waiting further developments. For winter delivery quotations are still about \$60, and it is probable that parties are waiting further developments. For winter delivery quotations are still about \$60, and it is probable that parties are waiting further developments. For winter delivery quotations are still about \$60, and it is probable that parties are waiting further developments. For winter delivery quotations are still about \$60, and for odd lots, early delivery, \$61.50 @ \$62.50 at mill is quoted. 2.300 nearly all of which are sunder considera-70.339 there are doubtless others under considera-tion which have not been made public." 1.995 tion which have not been made public." according abroad we find stocks in Great Britain quiet.

steadily increasing, and prices receding to a point at which heavy sales will undoubtedly be made for American account. We hear of good No. 3 English Iron offered to-day for shipment at prices equal to \$18.50 in Phila-delphia or New York, and Foundry Irons, English and Scotch, all the way from \$20 to \$24. Under these circumstances it would be unwise to anticipate much of an advance. In the long run it will be found far better to employ our fullest capacity steadily at mod-erate prices, than to get up a "boom" and repeat the experiences of last year. Pur-chases for American account in Great Britain would probably cause an immediate improve-ment in that market, but our requirements from abroad are not likely to be large, and, in view of increasing production, it will be good policy to keep cool, even if there is an advance in foreign markets. The most re-cent experience appears to have been that cent experience appears to have been that the English market advanced just so long as the American demand continued, and without it just as steadily declined. These remarks appear to be in order from the fact that a renewal of business relations with English iron-masters, seem to be immediately pending. Offers of \$18 were made to-day for 1000-ton lots of No. 3 Middlesboro' in store, but \$18.50 is asked. Scotch Iron is in small supply and quiet at \$22 for Eglington, and \$24.50 @ \$25 for Gartsherrie.

Charcoal Iron—Is very quiet, and prices as varied as the brands offered. We hear of \$30 quoted in some cases, up to \$38 in others. The best makes of Cold-blast are held firmly at the outside quotation, others difficult to

Bessemer Pig.-The market is weak and sales made at \$26 last week cannot at present be duplicated. Buyers offer \$25 @ \$25.50, but we have heard of no transacions below \$26 for the best makes.

Blooms-Are dull and irregular. The best Charcoal Blooms command about \$65 per ton of 2464 b, but we heard of a lot of Southern offered and not taken at \$60, Anthracite nominal at about \$52.50.

Muck Bars .- The demand is very light, and \$38 at mill is considered a full price Small lots have been taken, but concession would have to be made for 500-ton lots.

Structural Iron.-There is a more active Structural Iron.—There is a more active demand, and several good-sized orders have been entered during the week. Bridge work is coming in quite freely, one firm alone having orders for the material for 21 bridges. The ship yards were probably never busier than now, all the leading concerns working up to their fullest capacity, with enough business on hand to employ them concerns working up to their tuned with enough business on hand to employ them with enough business of the year. Manufacduring the balance of the year. Manufac-turers of Structural Iron do not report quite so favorably, however. They are mostly running single turn, and so far have been able to meet the demand without doubling up, to meet the demand without doubling up, although they hope to do so soon. The outlook is good, and a steadily increasing demand anticipated. Quotations are about as follows: 2.6¢ for Angles, 3.0¢ for Tees, 3.25¢ for Channels and Beams. A sale of 500 tons Angles was made here a few days ago, for use in the North River Tunnel. Beams and Channels, as will be noticed, are quoted higher than they have been for soons. quoted higher than they have been for some time; manufacturers having found prices unprofitable, have agreed to advance to

Plate and Tank Iron.-The market is in better shape, and as a considerable amount of business has been entered recently, manufacturers are inclined to stiffen their prices. It is difficult to give exact quotations, however, as much depends on the size and character of the order on the size and character of the order. Qualities also vary, so that prices which one party would probably be glad to accept, others would just as promptly refuse. There is a better feeling, however, and fair average quotations are about as follows: Tank Iron, 2.7¢@2.8¢; Refined Iron, 3.2¢@3.4¢; Shell, 3.5¢@3.7; Flange, 4½¢@5¢; Fire Box, 5½¢@6¢.

Sheet Iron.-The demand is quite active, and sales have been about equal to the out-put, so that stocks are unusually small for the season. A large amount of orders have been entered for forward delivery, and in some cases manufacturers express the opinion that they have as much on their books as they care for at present. Prices are steady and unchanged, and for small loss may be quoted as follows:

lots may be quoted as follows: Common Sheet, No. 26 to 28.

Bar Iron.—There is a better feeling in the Bar trade, and prices are steady at last week's quotations. If anything, the market is a shade stronger, and it is difficult to obtain concessions of more than a twentieth, even on large orders. The pressure from the West is not felt so much as it was a while back, and the general tendency of the market is toward improvement. We have market is toward improvement. not heard of any specially large orders being offered, but the smaller class of consumers are steady buyers, keeping the mills very fairly occupied. The outlook is encourag-ing, and a very large trade is looked for in the immediate future. The card rate is continued at 2.4¢, upon which rate the majority of sales are based.

Steel Rails.-There is very little to be said in regard to this department of business, except that the market is quiet. The The mills are well supplied with orders, and the companies are satisfied to run along as they are without seeking for additional business are without seeking for additional business. It is intimated that there are orders to be filled, for which extra prices could be obtained if deliveries could be made in time, but the mills are said to be all full, although according to port for delivery; market

Iron Rails.-There has been less actual business closed than was expected a week ago, and the position of the market shows very little change. A sale of 1500 tons 35s, for Western delivery, and a number of 50 to 100 ton lots, comprise nearly all the business of the week. There are several orders on the week. There are several orders on the market for lots of 1000 to 3000 tons each, which, it is supposed, will be placed within a few days, but buyers and sellers are wide apart in their views as to prices. In some cases \$47.50 @ \$48 at mill is quoted for 56s, but buyers talk \$46 @ \$46.50 as about their figures. Lighter sections are quoted from \$50 @ \$52 at mill.

Steel Blooms,-No sales are reported this week, and prices quoted from the other side are very irregular. Probably £6. 10/c. i. f. would induce purchases, but higher figures asked.

Railway Supplies.—Spikes are nominally 2.75¢; Bolts, 2.75¢; Fish Plates, 2.5¢. The market is rather quiet, and to secure large orders concessions would be made. Steel Ends .- The market is quiet, and

no sales have been made for some days past. Quotations are nominal at \$28 @ \$20. Old Rails.—The trade are in doubt as to Old Kalls.—The trade are in doubt as to the ultimate course of the market. At prices quoted by some parties, say \$27 @ \$27.50, consumers find it a most difficult task to secure supplies, and only a few small lots have changed hands, all at the outside quotations. Buyers are prepared to take hold freely at the prices named, but \$28 is asked, and purchases of a few times of the process of the contract of the cont

and purchases of a few thousand tons would probably cause holders to advance their limits again. Briefly stated, there are buyers at \$27 @ \$27.50, sellers of a few small lots at \$27.75 @ \$28, and a disposition among holders to advance their figures on the slightest indication that consumers are in need of supplies.

Scrap Iron .- The market is somewhat firmer, and selected lots are held as high as \$32. Medium qualities have changed hands at about \$30, but the demand is very active. Cast sells at \$20 @ \$21; Stove Plate, \$16.50 @ \$17.

The firm of W. Hutton & Co. have been dissolved, and the business will be carried on by Shirmer & Co., at 250 South Third street. They will make a specialty of Scrap Iron and old material generally.

PITTSBURGH

Office of The Iron Age, 77 Fourth Avenue, \ PITTSBURGH, PA., March 1, 1881. \ Pig Iron,—The market continues firm,

but quiet. While the demand, as a rule, is confined chiefly to supplying immediate wants, there is a very fair business in the aggregate. As stated in our report of last week, the most of the mills here bought week, the most of the mills here bought pretty freely prior to the last advance, and as manufactured Iron has not responded to the enhanced cost of the raw article, they seem disposed to use up what stock of the latter they have before buying any more. Consumers contend that there must be a radical change before long—an advance in Finished Iron or a decline in the raw article, and the general opinion is that it will be the former. Furnacemen say that rather than submit to Furnacemen say that, rather than submit to a decline, they will blow out; that it is better to be idle than to work for nothing; indeed, the great majority of them insist that there is no prospect of a reduction, and some are now refusing to sell at current prices. Forge Irons may be fairly quoted at \$23 @ \$24, 4 mos., for ordinary to extrastrong, Neutral; \$24.50 @ \$25 for cindermixture Red-short; and \$27 @ \$28 for allore ditto; Foundry grades, \$23.50 @ \$25 for Nos. 2 and I. for Nos. 2 and I.

Bessemer Iron-Continues firm, with Bessemer Iron—Continues firm, with considerable inquiry, and while there has been no advance during the past week, the feeling generally obtains that prices will go higher. One of our city furnaces is reported as having made a sale of 15,000 tons, to be made from the best Lake Superior ore, to a Bessemer Steel Company in the vicinity for delivery during the summer, at \$28 per ton, and while this appears to be the ruling price, some furnaces are holding for an advance and refusing to sell at the for an advance and refusing to sell at the price named. One of our leading furnacemen informed your correspondent, yester-day, that he expected standard brands of Bessemer Iron to go to \$32 or \$33 within the next month or two

Manufactured Iron.-About the only feature worthy of note is a firmer feeling We are cognizant of mill owners Common Sheet, No. 22 to 25. 4.56
Common Sheet, No. 10 to 21. 4
Best Refined ½ 6 ½ 8 advance on the above.
Best Bloom Sheets. No. 22 to 25. 6.56
Best Bloom Sheets. No. 16 to 21. 6.56
Best Bloom Sheets, No. 16 to 21. 6.56
Blue Annealed, 3-16 to 16. 3.36
Blue Annealed, 3-16 to 16. 3.56
Blue Annealed, 3 nerative prices, the demand is not what was expected it would be, although the protracted cold weather has had a good deal to do with keeping back orders. There is, and has been for some time past, a good deal of inquiry. Buyers are asking quotations for large lots, especially for forward deliveries, but manufacturers generally report that they are making but few sales. This is ac-counted for by the fact that prices are stronger and higher, and buyers are no doubt holding off in expectation of being able to do better. Merchant Bars are very generally held at 2.25¢ rates, 60 days, 2 % off for cash, although we do hear of occasional sales at a tenth less; Sheet, 3.50¢ @ 3.60¢; Plate and Tank, 2.65¢ @ 2.75¢; Skelp, 2.25¢ @ 2.35¢; Hoop, 3¢ @ 3.10¢.

Nails.-The advance of last week is fully sustained, and while some makers were doubtful about the propriety of the advance at the time, being apprehensive that possibly it could not be upheld, that apprehension appears to have subsided. One very impo tant point in favor of the makers is supply, both in first and second hands, is said to be less than usual at this season, owing in part to the recent protracted lockout at Wheeling, which shut off production at that point. We quote at \$3, 60 days, with 10 cents per keg abatement on car-load lots and 2% off for cash.

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The the post such time Four \$25 Most @ \$ MOId weare with Rail

Wrought Iron Pipe. - There is a steadily increasing demand; orders are coming for-ward freely, and the indications are that the pipe mills will have all they can possibly do this year, as the consumption promises to exceed that of 1880, when it was larger than during any preceding year in the history of the business. Discount on Gas and Steam Pipe remain unchanged at 65 % @ 67 ½ %; on Boiler Tubes, 40 %; Oil-Well Tubing, 22 ¢ per foot, net; do. Casing, 72 ¢, net.

@ \$24; Cast, \$15 @ \$17; Old Wheels, \$28 @ \$30.

Ores.—We quote: 50 % Brown Hematite,

Railway Supplies.—Steel Rails are held here at \$64 @ \$65, cash, at mill, for delivery late in the summer or fall. Railway Spikes unchanged at 2½¢, 30 days; Splice Bars, 2.25¢ @ 2.35¢; Track Bolts, 3½¢ @ 23½¢.

Muck Bars.—No sales reported, in the absence of which we quote at \$38 @ \$40 for Neutral to Red Short.

Steel.—There appears to be no lack of orders. The mills all seem to be busy, but there is considerable complaint in regard to prices, which are being cut more or less, in-dicating that there is considerable competi-tion. The productive capacity has been largely increased within the past few years; yet the consumption is steadily keeping pace. We repeat former quotations: Best Cast and Refined Cast Tool Steel, 11¢; Crucible Machinery, 7¢; Bessemer and Openhearth ditto, 5¢; ditto Spring, 4¢; ditto Plow, 4¢.

Scrap.—There is a fair business, but dealers complain that prices are low here, as compared with cost at sources of supply. No. I (Railway) Wrought, \$31 @ \$32 per net ton; ordinary ditto, \$28 @ \$30.

Coke-Continues in steady demand, and but for the difficulty in getting rail transportation, business would be larger than it is. Shipments are being made in all directions; new markets are being opened every year in different parts of the country; hence, notwithstanding the productive capacity is being steadily increased, the demand is growing as rapidly. No change in prices; for immediate delivery, \$1.65 @ \$1.75 per ton, free on cars at ovens; lines for future delivery can still be made at \$1.50.

Window Glass,—Owing to the back-wardness of the season, business continues rather slow, but the outlook is considered very premising for a good spring and summer trade, and manufacturers generally are in good spirits in consequence. No change on card or discounts.

CHICAGO.

Office of *The Iron Age*, 36 and 38 Clark Street, cor. Lake Street, CHICAGO, Feb. 28, 1881.

Pig Iron.-The demand for Lake Superior Charcoal Iron is very good, with numerous inquiries, particularly from Eastrom points: there are no changes to note in quotations: most furnaces, as a rule, are entirely sold up for present delivery. In the way of special transactions occurring during the week, we have to note a sale of 2000 tons Nos. 2 and 3 for car-wheel purposes at regular quotations, and another sale of like amount and for same purpose at an advance of \$1 per ton over present prices. advance of \$1 per ton over present prices. For Foundry Irons, considering the condition of the weather and facilities for transportation, the demand is fair and prices are fully maintained. We quote: Lake Superior Charcoal Nos. I and 2, \$32; No. 3, \$33; Nos. 4, 5 and 6, \$34; Scotch Imported (according to brand), \$27.50 @ \$29; Scotch American (according to brand), \$27.00 \$20; Anthragite \$20. ing to brand), \$27 @ \$29; Anthracite, \$24 @ \$26; Coke, \$25 @ \$27; Silvery (soft), \$24 @ \$26.

Rails.-The demand for Steel Rails con Kalls.—The demand for Steel Rais continues active and the tone of the market strong. Mills being largely sold ahead, we are unable to give quotations for early delivery, and quote for future delivery, \$63 @ \$64. The demand for Iron Rails continues satisfactory. We quote, according to specification \$50 @ \$55 fication, \$50 @ \$55.

Manufactured Iron. — We have no special features to mention regarding Manufactured Iron, with the exception of a disposition on the part of the mills to hold for better prices. The demand is large for this season and inquires are numerous. We quote: Bar Iron, \$2.50 for ordinary orders, and \$2.40 for car-load lots; Sheet Iron, from to the Argune at \$2.40 and \$2.20 for large. To to 14 gauge, at \$3.40, and \$3.30 for large lots; Tank Iron at \$3.40, and \$3.30 for large quantities; Hoop Iron, \$3.20 @ \$3.30.

Nails.—The recent advance in price of Nails has been followed by increased activ-

Steel.—The demand for Tool, Machinery and Steel for Agricultural purposes continues good. There are no quotable changes in prices to note. We quote: Tool, 12¢; Machinery (open hearth), 6¢; Crucible Machinery, 7¢; Hammer (Cast), 2 inches and under, 9¢; over 2 inches, 1c¢; Cast Spring, 7¢; open-hearth Spring, Tire and Sleigh Shoe, 5¢. In large lots these prices would be shaded.

Scrap Iron.-The market for Scrap Iron Scrap Iron.—The market for Scrap Iron is decidedly weak, with little or no business doing. We quote: Forge Scrap, \$30 @ \$32; No. I Wrought, \$26 @ \$27; Heavy Cast, \$24 @ \$25; Stove Plate,\$17 @ \$18.

CHATTANOOGA.

Office of The Iron Age, Market and 8th Sts., CHATTANOOGA, Feb. 28, 1881.

Business has been improved by better eather throughout the South. The warm weather throughout the South. The warm, dry days of the closing week have brought farmers into market for agricultural tools and other supplies. Manufactories are all in full blast, except the Lookout Bar Mill, of this city, which is temporarily shut down on account of a puddlers' strike.

Pig Iron .- The business continues good. The demand is quite up to or a little beyond the supply of higher grades. There is a disposition in some quarters to advance rates, but the largest and most enlightened dealers and producers are opposed to it. We continue our last figures. We quote: No. I Foundry, \$25 @ \$27; No. 2 Foundry, \$23 @ \$25; Gray Forge, \$20 @ \$22; White and Mottled, \$18 @ \$20; Car Wheel Metal, \$38

Ores.—We quote: 50 % Brown Hematite, per ton, \$2 @ \$2.75; Red Fossil, \$2 @ \$2.25.

Nails.-The Nail trade continues firmer. The Vulcan mills will be in market next month with about 8000 kegs, which may slightly influence the local trade, but will have no effect on prices. We quote at \$3.25 rates; usual discount on car-load lots and

Manufactured Iron.—The Bar Iron market is steady. The local supply has been affected by the stoppage of Lockout Mills, though dealers make no change in mills, though dealers make no change in prices. We quote Bar at \$2.35, and stronger than at date of last report; Railroad Spikes, \$3; Track Bolts, \$4; Trestle Bolts, \$4.50; Fish Plate, \$2.50.

Coal.—Lump remains at \$5 \$7 ton, with a very dull market. Several of the Southern towns have abandoned Coal as a domestic fuel, on account of the price. We hear of one considerable manufacturing contract for a six months' supply at \$2 P ton, at mill.

Coke.—Furnace Coke, \$3 per ton at furnace; Foundry, 10¢ @ 12¢ per bushel.

Steel and Iron Rails.-Steel Rails are quiet and steady at the old figures. Iron of first quality could hardly be had at less than \$50 @ \$52. Light T would command \$57 @ \$60, in small lots.

BOSTON.

FEBRUARY 26.—The market for raw Irons is moderately active and firm, but consum-ers are inclined to purchase only according to their requirements; and there is rather more pressure to sell on the part of produmore pressure to sell on the part of producers. Production during the present season has undoubtedly been in excess of requirements. We quote American Pig Iron at \$25 @ \$25.50 for No. 1 X; \$22 @ \$22.50 for No. 2 X, and \$20 @ \$21 for Gray Forge. These prices are f. o. b. at the port of shipment. Small spot lots will command \$2.20 to higher. Execute the product of t Forge. These prices are f. o. b. at the port of shipment. Small spot lots will command \$2 \$\gamma\$ ton higher. Foreign Iron is in moderate and steady demand at unchanged prices. We quote: Langloan, \$24 (@ \$25; Glengarnock and Gartsherrie, \$23 (@ \$24; Eglinton and Carnbroe, \$22 (@ \$22.50, and Middlesboro', \$18.50 (@ \$19 for No. 3 and \$20 for No. 1. Old Rails are easier, and prices are a little unsettled. We quote American at \$32, and foreign at \$28 (@ \$29. Manufactured Iron is in fair demand and firm at \$2.30 for Refined Bars. There is no change in Plates, and we continue to quote: \$2.90 (@ \$3 for Common and Tank; \$3.20 (@ \$3.37½ for C. No. 1; \$3.50 (@ \$3.62½ for C. H. No. 1 Flange; and 6½ \$ for Bay State X Flange for fire-boxes, &c. Norveay and Swedish are quoted at \$3.75 \$\overline{a}\$ cwt. for Bars, and \$4.75 for Shapes. Nails are quiet at \$2.85 (@ \$2.90 \$keg, net. It is reported that the demand for Steel Rails continues to increase and all the mills are far behind their orders. Prices have advanced from \$62 (@ \$64 \$\overline{a}\$) ton, partly on account of the demand, but mainly because of an advance at about \$1 \$1 ton in England and \$1 in ocean freights. Iron Rails are in of an advance at about \$1 % ton in England and \$1 in ocean freights. Iron Rails are in request at \$47 for heavy and \$52 for light, and Old Rails are held at \$29 @ \$32. The estimates for new roads are 935,000 tons and 650,000 for the renewal of old roads. Copper is quiet but firm at 1956 @ 1956 Copper is quiet but firm at 19\%\(psi \@ 19\%\(psi \) for round lots of Lake, and 18\%\(psi \@ 18\%\(psi \) for Baltimore. The Boston store price is 19\%\(psi \) for Lake and 18\%\(psi \) @ 19\epsi \text{ for Baltimore.}

There has been no change in the combination prices of Manufactured Copper. We quote: New Sheathing Copper, 26\(psi \); Braziers', 28\(psi \), and Bolts, 28\(psi \); Bottoms, 31\(psi \); American Yellow Sheathing Metal, 17\(psi \@ 18\(psi \); Yellow Metal Bolts, 20\(psi \); and English Yellow Metal Sheathing, 14\(psi \), in bond. Lead is in light demand and prices favor the is in light demand and prices favor the buyer. We quote 4.85¢ for car-load lots delivered in Boston. Store lots command 50 for Western and 434¢@474¢ for remelted. ity. We quote \$3.20 for ordinary lots, with usual discount of 10¢ off for car-load lots and 2 % for cash.

Steel.—The demand for Tool, Machinery and Steel for Agricultural purposes continues

There are no contents of the prices of manufactures are unchanged, as follows: Bar, 6½¢; Pipe, 6½¢; Sheet, 7¢; Tin-lined Pipe, 15¢; Tin Pipe, 40¢, all less 10 % to the trade. No. 1 Solder, 11½¢. Spelter is in moderate demand at 5¼¢ @ 5½¢ for Western, and 4¼¢ @ 4½¢ for remelted. Sheet Zine is quoted at 74 € The prices of manufactures are unchanged 5/85 for resettly, and 3/47 a 7/7 @ 7/40. Sheet Zinc is quoted at 7f @ 7/40. Tin is quiet and easy at 20f for Straits and English. There is no change in

LOUISVILLE.

Tin Plates. - Commercial Bulletin.

Messrs. GEO. H. HULL & Co., Com mission Merchants, report to us as follows, under date of Februry 25: The market is firmer, but without change in price. Several large sales have been effected at full figures, many of the furnaces are declining to sell for future delivery, believing prices will be higher. Others, however, are willing to sell, as buyers wish to buy and considerable sales have been effected for future delivery. Our quotations are for cash:

FOUNDRY IRONS.

No. 1 Hanging Rock, Charcoal \$27.00 @ 28.00
No. 2 11 11 26.00 @ 30.00
No. 1 Southern, Charcoal 25.00 @ 26.00
No. 2 " 22.00 @ 24.00
No. 1 Hanging Rock, Stonecoal and
Coke
No. 2 Hanging Rock, Stonecoal and
Coke 22.50 @ 23.co
No. 1 Southern, Stonecoal and Coke 23.50 @ 24.00
No. 2 " 11 11 22.50 @ 23.50
"American Scotch" 23.00 (6) 24.00
Silver Gray 19.00 @ 22.03
Scotch 27.00 @ 29.00
MILL IRONS.
No. 1 Charcoal, Cold-short and Neu-
tral \$22.00 @ 24.00
No. 1 Stonecoal and Coke, Cold-short
and Neutral 21.50 @ 22.00
No. 2 Stonecoal and Coke, Cold-short
and Neutral 20,50 @ 21,50
No. 1 Missouri and Indiana Red-short. 26.00 @ 27.00
White and Mottled, Cold-short and
Neutral 19.00 @ 20,00
CAR WHEEL AND MALLEARIE IDONS

Hanging Rock, Cold-blast.

weather has done much to develop the long weather has done much to develop the long awaited spring trade. Inquiries and orders are coming in freely. Plow steel, plantation and farm supplies are in active request. The consumption of fence wire this year promises to be immense. Bar iron is very firm and mills are asking \$1 per ton more than they did a fortnight ago. Nails are selling at the advance, though prices may not immediately conform to factory rates. not immediately conform to factory rates as some of the largest jobbers anticipated the action of the meeting and laid in a fair supply. However, the prospects for build-ing are good, and there will be an unusually heavy demand for everything that enters into it as soon as the season fairly opens. Hardware of all kinds is looked upon as good property.

NEW ORLEANS.

Messrs. Minnigerode & Co., dealers in Railway Supplies, 61 St. Charles street, write as fellows under date of February 24: We have little to report in addition to ours of 18th inst., except to note continued activity in our market consequent upon an influx of visitors to the Mardi Gras festivities. ties. Our city has on its gala attire, and already room and space is at a premium. There are continuous arrivals of foreign new Rails, both iron and steel, and we have notice of several cargoes affect to arrive. Lead.—We quote: Pig Lead, 4½ @ 5\$.

Steel.—There is a light supply of Steel in all forms in this market, and prices rule stiff. We quote: Plow Slabs, 3-inch and under, \$4.70; Black Diamond, ordinary sizes, 13\$.

lows:	101-
Scotch Pig, f. o. b., according to brand \$27.00 @\$	28.co
Bar Iron	
New Iron Rails (foreign) according	
to section 46.00 @	48.00
dard section	
Track Splices	
" Snikes	
Old Iron Rails, f. o. b 20.00	31.00
Uld Car Wheels, gross, f. o. b so oo	
The second name of the second na	lows

ST. LOUIS.

Messrs. Hoffer, Plumb & Co., Pig Iron and Iron Ore Merchants, 417 Pine street, write us as follows, under date of February 26: The demand remains good, and prices are firm at the following figures for mmediate delivery:

HUT BLAST CHARCOAL,	
Missouri, No. 1 Southern, No. 1 Hanging Rock No. 1	on on the on he
COKE AND COAL.	
Missouri No. 1	26.00 @ 25.00 @ 26.00
MILL IRONS.	
Cold-short	23.00 @ 24.00
CAR WHEEL AND MALLEABLE I	RON.
Missouri Southern	32.00 @ 35.00 35.00 @ 38.00 35.00 @ 43.00
R. L. COLEMAN & BRO., Fourt	h and Pine

streets, telegraph us as follows March 2: There is a good demand this week, especially for Mill grades, and furnaces generally are unwilling to make any concessions to obtain orders. We have notice of a molders' strike in one of our largest stove foundries, but unless it spreads to others it will not affect our market.

FOUNDRY IRONS. Hanging Rock Charcoal No. 1 \$20,00 @ 20.

28.00 @ 29.00
25.00 @ 26.00
1. 25.00 @ 25.00 1. 25.50 @ 27.00
22.50 @ 23.00
22.50 @ 23.50 25.00 @ 26.00
E IRONS.
42.00 @ 44.00 35.00 @ 38.00 35.00 @ 38.00 35.00 @ 40.00

market. Iffices are fairly quote	MDIE.
Hot-blast C C Foundry mos	\$25.50 @ 27.00
Cold-blast C C Car Wheel 4 mos	35.00 @ 38.00
Warm-blast C C Car Wheel 4 mos	28.00 @ 37.00
No. 1 Coke Foundry4 mos	24.00 @ 25.00
No. 2 Coke Foundry mos	\$2.50 @ 23.50
No. 1 Raw Bit. Coal Foundry 4 mos	21,50 @ 22 00
No. 2 Raw Bit. Coal Foundry 4 mos	21.00 @ 21.50
No. 3 Raw Bit. Coal Foundry 4 mos	20,50 @ 21.00
Forge Raw Bit. Coal4 mos	20.00 @ 21 50
Forge Coke 4 mos	21.00 @ 22.50
Bar Iron, card rate	2.15 6 2.30

sion Merchants, report the Pig Iron mar-ket as follows, under date of February 28: The Iron market for past week has been quiet; demand continues fair and prices unchanged. Baltimore Charcoal Wheel Iron....\$38.00 @ \$40. Virginia
Anthracite No. z..... " No. 2. "
" No. 3. "
" Mottled and White...
Charcoal C. B. Blooms. "

RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, writes as follows under date of February 28: I report continued activity in the Pig Iron market, with no abatement of confidence in existing prices. New brands are selling from \$1 to \$2 \$\text{P}\$ ton brands are selling from \$1 to \$2 gr ton under quotations, and will, so soon as their quality is fully established, be correctly quoted. The stringency in the New York money market has had no influence here on united.

Scotch	Pig Ire	on		 	1	\$24.00	@	27.0
Americ	an Sco	tch Pig	Iron.	 		27.00	0	20.0
No. I				 		25.00	0	28.0
No. 2				 		22,00	@	25.0
No. 3				 		21,00	@	23.0
		White				19.00	00	21.0
Virginia						38.00	0	41.0
Old Rai								
Old Wh	eels				in.	28.00	0	29.0
Wrough	nt Scra	p. No.	I	 		22.00	(0)	25 0
Cast, M	achine	ry Scra	ıp	 		21,00	0	22.0
Richmo								
Horse S	shoes, 1	Credega	ar	 			@	4.0
Mule	46	46		 ***			0	5.0

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.) LONDON, ENG., February 14, 1881. TRADE TOPICS

are not just now of an unusually exciting nature—that is to say, they are entirely free from sensation. At the same time the vie intime of iron and steel industries is by no means monotonous to those whose privilege of these changes is in part due to the obor misfortune, as the case may be, it is to play the leading parts in the drama now being performed. I say "drama" because I don't think things are sufficiently serious to be classed as tragic, while, on the other hand, there is very little of the nature of corned or force in the severe competition. comedy or farce in the severe competition and continuous losses which many manufacturers have to face. The gentleman who failed the other day in Staffordshire, for instance, and whose books revealed that he stance, and whose books revenied that he had long been losing £250 a week, could scarcely have found much amusement in the latter portion of his commercial career. That the state of affairs with many is dramatic in intensity, those who know most will least be inclined to deny. Es-pecially is this the case in Scotland and in Staffordshire. In the former production is being carried to lengths which might be termed reprehensible, did we not know the "dread alternative" in store for those who look behind them, and in the latter several heavy failures have already taken place, with every likelihood of others to follow post-haste. In several lines of iron and of post-haste. In several lines of iron and of manufactured hardwares competition is being pushed to extremes, and it is an open secret in more than one branch of business that the victims are ready to drop. Strenuous efforts are being made to avert the disasters so threatened, but in several instances these efforts will not be attended with success for the signal reason that the stronger Silver Gray.

| MILLINOSS. | 25.06 & 35.06 | 37.06 | 37.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 38.06 | 3 by a large firm of exporters, for several miles of wire netting. One firm of makers quoted so much under the rest of the comdeuce with selling prices in London, which consumes enormous quantities of these nails for building purposes. It is stated that the Leeds makers pay from 7/6 to 10/per ton more for the nail sheets than their rivals at Brum, yet they sell in London much cheaper. It is inferred, consequently, that money is being lost, and it is asked cut bono! If the figures given are correct, it is pretty clear that the game is not worth the candle, and that those playing it will shortly reveal their burnt fingers. As regards tin plates, I need not say much here. In that line the Diabolus is located at Liverpool, where buyers continue to play off the makers against each other with skill and much success. The new houses are apparently desirous of establishing connections at any cost, and are pulling down prices to an extent which is serious to many of the oldestablished concerns. It is suggested by the Ironmonger, I observe, that it might possifunctions.

These stores might be located for pig iron. at Liverpool, and should be controlled by a committee of the members of the trade. The at Liverpool, and should be controlled by a committee of the members of the trade. The surplus production would then be sent into-store and warrants issued for the plates, either in lots of 500 tons, as is the case at Glasgow, or as might be otherwise determined. It is correctly remarked by your-contemporary that one great advantage of the adoption of this plan would be a correct knowledge of the reserve stocks—a point which is of high importance to everybody, but which is outside the cognizance of the majority at present. Whether the idea is likely to meet with acceptance, or the contrary, I confess myself unable to predict; but as it stands I certainly think it worthy of consideration. The warrants would be easily negotiable, and, as is the case with pig iron, would often sell when the articles they represent could not be disposed of. Reverting now to Reverting now to

IRON AND STEEL.

vious and unchecked excess of the supply over the demand, and the latter to the in-creased cost of fuel, combined with serious labor movements for higher wages. In re-spect of pig iron, stocks are constantly increasing in all directions, and the shipping demand is apparently on a much smaller scale than last year—a fact which is proven by the weekly statistics, as well as by the monthly returns of the Board of Trade. In spite of this circumstance, however, the production proceeds as heretofore—indeed, there have lately been several additional furnaces restarted in different parts of the country. Investors and speculators have therefore, grown weary, and are endeavor-ing to realize their holdings, which endeav-ors are of themselves sufficient to force down ors are of themselves sufficient to force down prices to a low level in the absence of compensatory conditions. Then, again, those who have been relying upon a renewal of the demand from your side for Scotch and English pig are deeply disappointed by its absence, and now appear to have made up their minds that there is little or no hope of a new "boom" in which we may participate. The hope may still linger with some persons, but in a general way the result is as I have stated, and we may not unreasonably expect to see a large proportion of the 550,-ooo tons or so of Scotch warrants thrown into the market in the course of the next these efforts will not be attended with success, for the simple reason that the stronger firms have "vowed a vow" to extinguish certain of their rivals at any cost. Thereafter the various combinations will probably close up their ranks and elevate prices to suit their own views. Apart from this question of animus, there is no vital reason for the prolongation of this severe competition, seeing that in all the branches of business indicated (I can't very well sail closer to the seeing that in all the branches of business indicated (I can't very well sail closer to the wind just at present—but "the time will come," as the tragedians exclaim) there is scarcely any pretense of foreign competition, and the cost of material, wages, &c., is so nearly alike in all cases that amicable arrangements might readily be made, provided an understanding could be established. Some of the departments in which competition is most severe are: Bar and hoop iron, wire, wire netting, horse nails (black and bright), cut nails, tinwares and tin plates. As regards wire netting, a somewhat violent controversy is raging, some of the makers being charged with playing fast and loose with the gauges. I do not profess to know the merits or demerits of the case, but I do happen to have heard of one instance in which the allegation appears to have been sustained. This was in reference to an order given out by a large firm of exporters, for several willed to the process of the said of the case in mind the prices and tonder the will rule up to the time and of Makers and the said of the contracts of the contracts for light sections now in the market. Iron rails are steady at £5. This was in reference to an order given out by a large firm of exporters, for several will rule up to the went of the case, but I do happen to have hard of one instance in which the allegation appears to have been sustained. This was in reference to an order given out by a large firm of exporters, for several will be the prices and foundries to be a sufficient excuse for the 5/ extra they now demand. This rise chiefly touches common and medium iron, the list prices of the best firms being unaltered and unlikely to be disturbed. Best Staffordshire bars, therefore, remain at £7. Ito/, with sheets, hoops, &c., in proportion. As regards blooms for the United States, a strong demand is still in existence, but very few lots are on offer, and those at £6 @ £6. The milked prices and foundries to be a sufficient excuse for the 5/ extra they now demand. Th

SCOTCH PIG IRON

	1880.	Tons.
Foreign		38,676
Coastwise	1881.	29.596-68,272
Foreign		25,400
Coastwise	**** ****(****************************	18,337-43,827
Decrease	***************************************	24.445

						NO	Y .	N	0.	1-
G. M. B., at G	lasgow				. ,	51	/6		40	6
Gartsherrie, a	at Glasgow					50			52/	
Coltness,	4.1					ÔI			52	
Summerlee.						60			51	
Langioan,						51			52	
Carnbroe,	**					57			58	
Calder.						bo			733	

Glengarnock, at Ar	rdrossar	ı		×					57/6	
Eglinton,	6.6			×	×	×	*		. 52/	
Dalmellington,	6.6				*	*	*	*	. 52/	
Shotts, at Leith			۰				0		. 61/	
Kinneil, at Bo'ness			*	*			٠		52/0	
Carron, at Granger	mouth.							. ,	52/0	

THE BOARD OF TRADE RETURNS

for January (to which I briefly alluded in my last week's letter) are not more than moderately good, but, all things considered, we can scarcely feel disappointed with the details they present, bearing in mind the serious hindrances of all kinds of shipping and other transactions caused by the weather. The imports were of the total value of £26,742,962, against £32,372,907 in January, 1880, and the exports £17,318,911, against £16,012,858. The total iron and against £10,012,052. The total hot also steel exported last month was 107,112 tons, valued at £1,645,280. against 275,979 tons, worth £2,094,724 in January, 1880. The decrease was very largely in respect of crude iron and old materials, although manufactured iron also fell off somewhat. Machinery and mill work, steam engines, hardware and cutlery, and other purely manufactured articles compare well with the same month of 1880—a circumstance which promises well for the future. Some of the leading items of export were as follows:

	Quan	tities.	Values.		
Articles.	1880.	1981.	1880.	83 I.	
Firearms, No	29,435	26,147	£28,468	£29,013	
Copper. unwt., cwts.	12,249	23,448	44.457	77,855	
Copper, wrt., cwts	25,939	28,439	102,044	101,130	
Sheathing, cwts	23,787	25,337	73,917	71,944	
Coal, &c., tons	1,299,789	1,208.487	48,010	543,210	
Hdw. and cutiery			254,616	278,120	
Pig. tons	102,565	68,971	349,390	190,991	
Bar, angle-bolt and			0 11100		
rod	28,367	19,581	212,677	134,446	
Iron rails, tons	11,143	7,084	62,157	45,130	
Steel rails.tons	28,016	23,240	171,044	154,189	
Railroad, tons	46,778	35,135	280,187	265,945	
Wire (except telegr.	4-111-	031-00		3.343	
wire), tons	4,696	5,830	57,758	79,054	
Hoops, sheets and	diele	31-3-1	30103	131-34	
boiler pits, tons	20,040	17,500	244,100	200,860	
Tin plates, tons	19,669	16,649	420,849	294,751	
Cast or wrt., tons	19,255	18,561	271,933	268,343	
Old for re-manufact.	28,242	7,206	168,280	35,307	
Steel, unwrought	4,458	6,366	83,441	800,00	
Mf. steel & iron, tons	1,019	1,323	56,116	67.485	
Lead tons	1,845	3,510	35,526	50-414	
Steam engines		3.3	180,104	239,780	
Other descriptions of				-2311	
mchy. & mill-work			355,881	414,781	
Plate and pltd. and			3331	4-415	
gilt wares			13,103	14,865	
Tel. w. & apparatus			-343	-4,3	
con. therewith			31,813	57,227	
Tin (unwrt.), cwts	0,420	4,643	41,382	31,0:0	
Zinc & speiter cwt	11,977	10,213	10,502	7,932	

In more extended det three leading lines thus: MARDWARE AND CUTLERY.

1879.

January.	_ 1079.	1000	1001.
Russia	£5,493	£5,707	£2,334
Germany	0,920	10,363	8,694
Holland	5.371	6,672	6,491
France	11,103	10,246	11,286
Spain and Canaries	7,443	9,538	10,605
United States	29,379	38,198	43,799
Spanish W. I. Isl'ds	4,975	4,625	6,975
Brazil	10,283	24,937	93,773
Argentine Republic	7,014	4,179	33,394
British North America	6,308	7,735	9,855
British Pos. in S. A	14,147	13,910	20,654
British India	21,243	30,058	37,478
Australia	41,262	23,499	34,224
Other countries	63,939	63,499	63,567
Total	£246,802	£254,616	£278,120
	N BAILS.		,-,
January.	1879.	x880.	z88z.
Russia Sweden and Norway	****	****	****
	£13		****
Germany			****
Spain	3,745	£1,419	£37
Italy	67	775	716
United States		41,511	35,687
Brazil	866	200	3,280
Chili	75	83	249
British N. America	545	339	90
British India	2,330	9,099	937
Australia	9,432	x,062	351
Other countries	7,357	7,669	3,893
Total	£24,430	£62,157	\$45,130
STE	EL RAILS.		
January.	1879.	183o.	x88x.
Russia		****	****
Norway and Sweden	£15,727	£611	****
Germany	E,440		
Spain	6,139	6,048	£933
Italy		4,595	21,834
United States	500	46,234	21,672
Brazil	4,098	11,679	14,633
Chili	3,339		514
British North America	9,141	7,207	1,701
British India	8,137	75,719	16,371
Australia	24,285	9,241	34,563
Other countries	4,681	11,720	51,778
Total	£20,422	£171,044	£154,189
	£79,437		
January.	1870.	x88o.	288z-
Russia	£8,148	£9,181	£8,620
Germany	8,856	6,051	35,488
Holland	3,116	2,000	9,173
Belginm	1,020	470	540
		0,181	6,150
France	5.793	25,228	
Spain and Canaries	57.121	4.048	9,74X

Australia....Other countries.... Total..... £306,055 £355,881 £414,781 TO THE UNITED STATES. The month's exports were as shown befigures for the same month of last year, as well as with December, 1880:

36,853 12,600 8,888

4,287 26,531 10,682 5,248 10,967 13,672 31,101 26,978

6,881

Egypt... Brazil.... British India.

Total.

Germany Holland . .

Egypt.... United States.

Brazil British India

ain and Canaries..

Article. Alkali, cwts. Hardware and cutlery, £. Hon.—Fig. tons. Bar, angle rod, &c. tons. Radroad, all, tons.	Month of January, 1881. 267,017 42,799 16,054 1,085 7,921	Month of Month of Month of January, January, December 1882, 1880, ber, 1880, ber, 1880, 1887, 18
Bar, angle, rod, &c., tons	10,054	56,670
Hoops, sheets, plates, &c., tons.	7,921	4,085
The plates, tons	12,177	17,013
Old wrought, tons	5.534	1,057
Lead, unwrought, tons	3,775	2,592
Other machinery, &c, £	35,622	33, 344
Special Return Trop rolls for	500	2,711
Steel ralls, tong	1,703	7,350

AN ANALYSIS

of last month's iron and steel exports has been prepared by Messrs Schmitz & Co., Middlesboro, whose table is useful and easy of comprehension:

	Total Exp'ts, 1880.	Total Exp'ts 1881.	Inc. upon 1880.	Dec. upon 1880.
	Tons	Tons	Tons	Tons
U. S. America	129.835	47,551		81,764
B. N. America	5,590	4,677		913
India	28,750	16.394		12,350
Australia	12,729	15,253	2,524	
B. South Africa	1,662	1,552		110
Russia	1,284	662		622
Germany	5.331	4,854		477
Holland	11,589	16,369	4,830	
Belgium	16,311	6,200	*****	IO, III
France	9,223	13,229	4,006	
Italy	3,717	6,111	3,394	
Turkey	1,415	937		478
Sweden & Nor	130			120
Denmark	3 x	X		
Spain & Canaries.	2,122	1,300		822
Egypt	891	1,873		
Brazil	3,325	3,992	667	
Peru	218	265	47	
Chili	10	105	95	
Destinations not				
specified	42,406	55.787	13,381	
	275,979	197,112	28,926	107,793

This, as will be seen, shows a net decrease of 78,867 tons.

WEST COAST HEMATITES

are quite firm at date, and are becoming more difficult to obtain for early deliveries. The appended figures represent quotations for ordinary trade lots, and are capable of being shaded 1/or 2/per ton when large

1	orders are offered.	Prices of	the day	
١		No. 1.	No. 2.	No.
1	Cleator	. 72/6	70/	67/
J	Lonsdale	. 67/	66/	65/
Ì	Workington	. 67/	66/	65/
1	Lowther		66/	65/
١	Moss Bay	. 67/	66/	65/
1	Harrington		66/	65/
1	Solway	. 67/	66/	65/
1	Maryport			65/
	Askham		64/	64/

CLEVELAND PIG IRON has gone back, in sympathy with the Glasgow market, and is now relatively weak. There market, and is now relatively weak. I here is no serious retrogression, however, seeing that Cleveland is in such a position that she must have a large share of whatever business may be doing. Shipments are beginning to assume better proportions, and with the approach of spring are certain to attain 3000 tons daily, or even more. Prices of G. M. B., net cash, f. o. b. Tees are:

AT SHEFFIELD

business is fairly good. There is no particular pressure, but in almost every leading department there is a tolerably satisfactory turnover. At the heavy iron works there is a good production of armor plates, beiler and ship plates, deck beams, locomotive engine frames, floor plates, axles, tires, buffers and springs. Some of these articles are, of course, made of Bessemer steel. For wire the demand is good, both as regards that for telegraphic purposes and the qualities best suited for working up into cables, colliery winding ropes, bridge cables and the like. All the rail mills are busy and well sold forward. Prices are very stiff. Steel sold forward. Prices are very stiff. Steel castings (wheels, crossings, propeller shafts and blades, cylinders, &c.) are in steady request. For usual sorts of merchantable crucible steel the call is about an average, your market being a leading customer for plates, sheets, rod and tool descriptions. The file and saw branches are only moderately engaged. The majority of the cutlery man-ufacturers are busy—a fact which is en-couraging the table-blade grinders to push forward their demand for an increase in their wages.

LABOR MOVEMENTS

at the moment are somewhat threatening and are not unlikely to cause much trouble and inconvenience in several important in-dustries. As has been usual of late years, the pioneers in this new strife are the coal miners, whose first outbreak has taken place miners, whose first outbreak has taken place in Lancashire, where there has been a great deal of rioting, turbulence, bloodshed and loss of money—the whole ending, after all, in the virtual defeat of the misguided men. They charge the South Yorkshire miners with having caused their defeat by not following their example, in the absence of which imitation the Yorkshire coal owners have furnished Lancashire with fuel Now. have furnished Lancashire with fuel. Now ...£218,027 £180,104 £230,780

MACHINERY AND MILL WORK.
1879. 7880. 1881.
1820,919 £48,477 £43,186 eral thousand men are already out on 40.243 13.824 that their leaders have tentatively agreed to a mutual sliding scale arragement for the regulation of wages. The terms of this scale, which will, if adopted, govern about 50,000 men and boys' wages, are that the miners shall take any one period of six months, from July 1st, 1879, to December 31st, 1880—say July 1st to December 31, 1879, January 1st to June 30, 1880, or July 1st to December 31, 1880—during which the average net selling price of coal shall be as-The month's exports were as shown below, where they are also compared with the figures for the same month of last year, as shall also be taken at the same pits for the last four months, say October, November and December, 1880, and January, 1881; if the last period of four months shows any advance over the other six months' period, to be selected, the men's wages shall be 214 per cent. for every complete 4d, of advance in the selling price of coal that may be shown up to 1/4 per ton: the fifth advance of 4d.
per ton entitling the men to a further advance in wages of 5 per cent, instead of 2½, this settlement to apply from 1st March next. The miners had demanded 10 per cent. rise, but many of those who had struck have accepted 5 per cent. Their response as a body to the above will be made known shortly. At one time the whole of the South Yorkshire and Derbyshire miners were united in one compact and powerful organization, but they are now divided into three separate camps, so that the coal owners have the advantage implied in the old axiom divide et impera. In the case of the dispute between the Durham colliery proprietors and their workmen, which had been referred to the arbitration of Mr. H. Palmer, M. P., the award has to-day been given in favor of the men. They are, conbut the sanguine Siegen people raised prices indeed, none but the sanguine Siegen people raised prices and designated as architectural cotton.

consequently, entitled to an advance equal to about \$d. a day. At the shipbuilding yards along the river Wear the platers and anglesmiths have compromised for a rise of 7½% on piecework and 2/ per week on wages, or about equal to half their original demands. The drillers have been conceded 5% on riecework and 2/ per week on time work. The helpers now ask an advance of 15%, and the joiners of 3/ a week. All the Tees-Side Engineers at Stockton, Middlesborough, &c., are on the move for a general levelling up of their rates of remuneration. They are encouraged to adopt and follow up this line of action by the general prosperity of the North of England districts. A sort of dead set has been made in their first instance against Bolckow, Vaughan & Co., the workmen's leaders apparently having conceived the idea that if they succeed with that concern the remainder of the employers will promptly "come down" without being shot at. About 700 of Bolckow Vaughan's engineers have, therefore, asked an advance of 5%, which has been refused. The men have, consequently, given in their notices, at these expiration of which the works would be stopped, unless (as is highly probable) a compromise is effected in the meantime. In several other branches of the iron, coal and shipbuilding industries the men are uneasy and are causing anxiety. At Sheffield the table blade grinders have issued a circular to all the cutlery manufacturers, calling attention to their (the men's) circular of October 23d last, in which the employers were asked to return (free from any discount) to the statement" of wages agreed upon in 1859. They now "trust that the improved state of trade justifies us in asking you to accede to "statement" of wages agreed upon in 1859. They now "trust that the improved state of trade justifies us in asking you to accede to our request on and after March I next." I understand the manufacturers will generally decline to make the concession demanded

PRICES OF METALS, ETC.

The subjoined list of prices is that of a leading firm here. Its details will no doubt interest many of your readers:

		Per t	
		£	8
	Pig lead		0
١	Sheet lead		E
	Lead pipe	. 16	0
	" tinned inside	. 18	- 06
	Lead encased tin pipe	. 31	O
	Composition gas tubing	. 18	CC
	Lead wire, to No. 12, 46/, 13 to 16	. 00	56
	Hand leads, 28/, deep sea leads	. 00	31
	Improved lead washers	. 28	OC
	Lead nails	. 50	00
	Tin pipe	. 114	-00
	Bar lead	. 15	XC
	Patent shot		Oc
	Hardened shot	. 18	30
	Tin in ingots	. 94	00
į	Plumbers' solder	. 46	OC
1	Tinman's "	. 46	00
1	Con red lead (orig nackages)	76	20
ı	" Reduced No. 1 "	25	10
ı	14 No. 2 "	. 34	00
ı	" Reduced No. 1 " No. 2 " No. 3 "	. 13	00
1	Glassmakers' red lead	. 13	EC
1	Pure English flake litharge. 5-cwt. casks		30
I	Pure English powdered litharge		00
Ì	Good foreign flake litharge		10
1	" powdered		ec
I	Pale powder litharge	18	XO
1	Orange lead, powdered	28	CO
ı	Dry white lead	. 90	00
J	Genuine ground white lead	. 22	00
1	No. 1		00
I	No. 2		00
1	Sheet zinc, No. 9 upward	. 20	10
1	Zinc nails, 11/2 upward	23	00
1	Hard spelter	. 13	08
1	Remelted speiter	. 34	00
ĺ			
1			

FOREIGN.

FRANCE. (Moniteur des Interets Materiels.)

(Moniteur des Interets Mater**).

Paris. Feb. 13, 1851.— Metals.— Business in Metals has been moderately active during the week, with a slight decline in copper, and a notable one in Tin, the remainder being unaltered. We quote to-day: Copper.—Chili Bars, 162, 50 % 165; Ingots and Slabs, 167, 50; Best Selected, 171.50; and pure Corocoro Ore, 165. Tin.—We quote Banca and English 4c, and Sillicon, Straits and Australian 237.40. Lead—Remains 37.50 % 38.25; and Spelter, 43 % 43.50. Fron.—In the Loire region, in the Bouth, the East, the North and Champagne works have received a great many orders, and prices are, on the whole, firm. Here we have been tolerably steady, notwithstanding the little doing just at present. Merchant Iron sells at 19.30 francs, and flooring at 20; at the North the works sell for 18 % 18.50, delivered at La Chapelle. The car works are so busy that they have been compelled to decline fresh orders, which have gone to be filled in Belgium and Austria instead. In the Haute Marne producers also find it difficult to make all the deliveries contracted; Coke Iron commands there 19 francs, and mixed 21. Foundries are doing a good trade; they are stiff in their demands. It cannot be denied that the new year has so far displayed a remarkable degree of activity in France; the fact is that so many circumstances combine to create it that the prospect is highly encouraging. The new premium on navigation will also help a great deal, for great animation will soon be noticeable in iron shipbuilding in all the ship-yards of France. Coal.—The late cold weather has been of great assistance to the Coal trade; shipments continue large.

BELGIUB.

(Revue Datevelle.)

Brussers, Feb. 13, 1881.—Fron.—At Charleroi the demand continues active, and the higher price, 13 francs for Merchant Iron, is without hesitation paid by consumers. A good many orders are received from abroad. Ironmasters are opposed to putting up prices too rapidly, for by doing so they would only provoke the speculative element, and create an unsound state of affairs. At Liege Merchant Iron commands 13,50 @ 14 francs; Moulage Pig Iron has also been tending upward there, but prices have not steadied yet. At all events there is a buoyant feeling, and the immediate future is looked forward to with confidence. The steel branch is in a highly prosperous condition. A suitable locality in which to hold the metal Exchange in this city in the future has not yet been fixed upon, a circumstance which has been an impediment during the past week or two to a free development of business. Metals have in the meantime been weak. We quote: Copper, 168 francs per 100 kilos; Lead, 38,50; Sheet Lead, 41.50; Spelter, 44.50; Sheet Zinc, 56; Banca Tin, 251, and Billiton, 248. Coal.—Coal for domestic purposes is inactive and weak once more since the coid weather has been followed by a thaw, but the demand for industrial Coal continues brisk, with an upward tendency in prices. Coal for family uses sells at 22 francs, and for industrial Coal \$9.50 is paid. (Revus Universelle.)

GERMANY.

(Borsenhalle.)

HOLLAND.

(Koch & Vlierboom.)

ROTTEDAM, Feb. 8, 1881.—Thn.—Prices have receded here, in consequence of the weakness produced in Eagland by the large shipments thither from the Straits. Final, y a little better tone began to prevail, and Banca has recovered from 53.50 @ 54guiders per 50 kilos., while Billiton improved from 53.45 @ 53.475. F. S., Feb. 12.—Since the foregoing was written there has been a decline of 25f. The Batavia Billiton sale averaged equal to 53.50 guiders per 50 kilos. here. The government returns for the month of November are as follows:

EXPORT OF TIN FROM HOLLAND.

	For	Nove	nber.	For	II me	onths.
To	1880. T'ns.	1879. T'ns.	1878. T'ns.	1880. T'ns.	1879. T'ns,	1878. T'ns.
Germany	X54	269	379	agSq	#860	3192
England		3.8	13	3273	506	144
Belgium		33 80	80	2335	1320	1308
France	21	36	13	581	484	355
Hamburg	59	10	60	707	339	574
The U. States			2	168	348	13
Oth'r countries	26	17	88	703	405	633
Total	490	443	636	8956	6328	6216
		_	-			

AUSTRIA.

(Austrian Trade Journal.)

(Austrian Trade Journal.)

Vienna, Feb. 13, 1881.—Hron.—There has been a relapse into duliness in Austria; when the orders from abroad for locomotives and cars were received it was expected that Iron would advance rapidly, but no further orders have dropped in, and both Pig and Merchant Iron have remained as they were before, and are even kept from receding with some difficulty. The fact is that the inclemency of the weather has influenced the Iron trade unfavorably, and that the course of the market will be shaped by the earlier or later advent of spring. The export of Pig Iron and Rails via Trieste has been on the increase of late. Some attempts have again been made by makers of certain specialities in the railroad material line to concoct combinations for at least reducing the warranty time in future contracts, but a general agreement has not been arrived at. Iron has been quiet. For the spring campaign various large sales have, however, been made, deliverable then, at unaltered prices. The sale of merchant iron is restricted. We repeat our quotations: Fig Iron, 44 @ 35 florins per ton at the works; Merchant Iron, 105 @ 115 per ton here; Sheet Iron, 135 @ 185; Pillars, 200 @ 122. Metals.—The market here has been moderately active, with but few fluctuations. We quote in florins per 100 kilos, here: Copper, 74 @ 80; Tin, 116 @ 177; Antimony, 80; Lead, 20,50 @ 22; Shot, 25 @ 25,50; Litharge, 20 @ 20,50; Spelter, 19 @ 20,50; Sheet Iron, 150 @ 50; Gun Metal, 85; Brass, 45 @ 60; Nickel, 4,50 per kilo; Bismuth, 11,50 per ditto; Blue Vitriol, 49; Ditto for telegraphs, 32; Green Vitriol, 40; Si Minium, 28 @ 90; Sugar of Lead, 44; Ziac White Vieille Montagne green seal, 44; red ditto, 34; blue ditto, 33 ditto, 33

EAST INDIES.

(Gilfillan, Wood & Co.)

SINGAPORE, Jan. 11, 1881.—Tin—Has been in steady demand, and about 400 tons have been taken at \$28 up to \$28.80, which is to-day's quotations; the buying has been mostly for London, Freights to England are supported; a vessel is wanted to take the berth for New York; the Oneida, for New York, took \$4x picula Tin. Exchange on London has a downward tendency, and closing rates are 3/3% for 6 months' sight bank bills. Exports from the Straits to the United States for the year 1880 has been 244,525 picula (8650 tons), against 120,216 picula (7300 tons) in 1870, 68,731 piculs (4140 tons) in 1878, and 69,363 piculs (4204 tons) in 1877.

CHILI. (Weber & Co.)

(Weber & Co.)

Valparaiso, Dec. 28, 1830.—Copper,—Since our last report the Chamber of Depaties passed a bill authorizing the further issue of paper money to the extent of \$12,000,000, a measure which no doubt the Senate will sanction. Meanwhile Copper opened at \$10,50, but when the exchange later on receded to 204, \$50 was paid. Large transactions have taken place in coast brands, and during the past few days the entire production of Hindobro, up to the end of March, 1881, was sold at \$30,25 on shore here. Sales since the 20th instant \$53,000 quintals, with 45/sail freight to England and 65/steam freight. Nitrate has remained firm, exchange being favorable, little Nitrate offering, and advices from Europe encouraging; even a slight advance was therefore paid. Beginning of February sailings, previously wholly reglected, are now bought without a reduction in price; this is a sign that no decline is apprehended in Europe. As far as the news and indications here allow us to surmise, production will not increase during the next few months, and exports remain limited. Sales since December 10, 140,000 quintals at \$3.55 @ \$3.62% for 95% @ 96, mostly at 46/3 freight to England, and December 10, 14,000 quintals at \$.55 @ \$3,52\for for 9\for \$\forall \text{qop}\$ at \$0.5\text{qop}\$. \$\forall \text{qop}\$ at \$0.5\text{qop}\$ at \$0.

The locomotive and car shops of the country are being pushed to their utmost to sup-ply the lack of rolling stock from which transportation has suffered so much through

Manufacture of Pins in the United States.—The pins used in this country are made by 14 factories, somewhat scattered Their annual production for several years past has been about 7,000,000,000 pins. This number has not varied much for some years, the demand remaining about the same. Two years ago the competition among the nine principal companies then existing for the manufacture of toilet pins led to such a cutting of prices that the business became unprofitable, and the market was flooded with goods. Dealers who were shrewd laid with goods. Dealers who were shrewd laid in stock, and families even bought in wholesale quantities for future needs. A year ago a combination was formed of three wire companies, and now all of the pins made by them are shipped to New York, and handled by the head agency in this city. From their common warehouse they are sent to every part of the country in quantities varying according to the female population. The importations of English pins are Small, and the exportation of pins from the United States is confined to Cuba, South America and parts of Canada, where, bowever, but few pins are sent. England supplies almost the whole world outside of the United States, although it is claimed that the American pins are not inferior in quality. Quality, however, is a matter which but slightly concerns the retail buyer. To him a paper of pins is a paper of pins, so long as they don't have heads on both ends. The raw material—the brass and iron wire from which all American pins are made—is from the wire mills of this country, and much of the machinery for their manufacture is of American invention and

New Uses for Sawdust.—The Lumber man says: We have been shown a model of a car wheel, consisting of an iron rim of 7 inches outward diameter by one-half inch thick, fitted with a well-proportioned hub, the space between the hub and rim filled with pine sawdust, pressed in so solidly that we are ready to believe the assertion that resting the iron rim upon bearings, a pressure equal to 23 tons applied to the hub failed to develop any signs of weakness. We hesitate in these days of progress to assert that anything is impossible, and we begin to think that even sawdust possesses elements of value hitherto unsuspected, and that the day may come when the filled New Uses for Sawdust,-The Lumber that the day may come when the filled grounds adjacent to all sawmills may be grounds adjacent to all sawmils may be seen to have a great value in the mechanical development and utilization of the now useless debris placed upon them to get it out of the way. Sawdust car wheels, sawdust brick, sawdust fence posts, railroad ties, and even sawdust window and door frames, wainscoting and moldings, begin to appear among the possibilities of the immediate. among the possibilities of the imm

A Costly Ironclad .- The Inflexible is a costly ship. Her hull cost nearly £500,000, and her engines and machinery almost another £100,000; but even the estimates another £100,000; but even the estimates will not show what the total expenditure, direct and indirect, will have been upon her before she is ready for her trial and commission, and "authorities," who usually swear by Admiralty calculations, are admitting that the outlay before her completion may be from 30 to 50 per cent. more than had been originally expected. The cost of her hydraulic machinery and appliances is a little eye-opener. They have been supplied by Messrs. Armstrong & Co., of the Elswick Foundry, whose bill is now before their lordships. It only amounts to rather more than £40,000, half of which is for "mounting the four 80-ton guns," which means furnishing the hydraulic fitfor "mounting the four 80-ton guns," which means furnishing the hydraulic fit tings for them.

Russian immigrants have domesticated in Minnesota the brick-lined porcelain stove, which every one who has been in Germany associates with his residence there, and remembers kindly for the even and healthful heat which it diffuses, if not for its cheerful aspect. Since these stoves are air-tight, and hence economize fuel, their introduction in regions where coal and wood are scarce is a matter of importance. It has been found that prairie hay serves to produce a comfortable heat when burned in these stoves, and machinery for compressing it has been put on the market. No doubt the patriotic American who has been taught to crave the quick, fierce heat of sheet iron will laugh at apparatus which requires an hour to do its work, but half a loaf is better than no bread, and an hour's delay is better than to freeze to death.

Engineering describes a series of simple and efficient devices designed by Mr. Richard Morris of Lahore, India, for restoring fired cartridge cases to their proper form and re-capping them when in the field.

A modification of the Jablochkoff candle, which is reported as being superior to it in a number of important points, has been brought out recently by Clerc and Bureau, of Gand, Belgium.

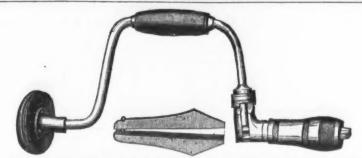
We are informed by Washburn & Moen Manufacturing Co. that the use of common salt and other salts for coating wire prep-aratory to drawing, has been patented and assigned to them.

A letter from a Nagasaki correspondent says there is reason to believe the occupa-tion of Port Lazareff, on the Corean Pacific Coast, will not long be delayed by Russia.

Coal has been found some distance east of Dominion City, Manitoba. Samples have been forwarded to Chicago and pronounced of excellen's quality.

The contract for supplying the city of Camden with pipes, fire plugs and special castings has been awarded to the Gloucester Iron Company.

After an interruption of two weeks by ice, Gen. Newton's operations in Hell Gate have been resumed



Though we have occupied this identical space in The Iron Age for more than twelve years, and though we have been the leading Bit Brace manufacturers of this country during all that time, we have seldom spoken of it in our advertisement, for the reason that all the leading dealers were supposed to know it. Since we first put

THE BARBER IMPROVED BIT BRACE

on the market, at least a dozen patent braces have run their race through the stores and junk stores, and are now forgotten. It is true, some of them died violent deaths, but most of them perished from constitutional weakness. We do not offer to meet competition, as no one else can make our Brace, and we have nothing to compete with. Others tion, as no one else can make our Brace, and we have nothing to compete with. Others might if they would make their braces of steel, but it is much more expensive, and no one can tell the difference until the brace is put into use. All of our Nickel-Plated Braces are made of rolled steel, with forged steel jaws, which will never wear out. We formerly made malleable iron jaws, which in time wore out. All such we will now replace with steel for 25 cents per pair. They are all one size and will always fit. Our Ratchet Brace at the present time has no competitor in the market. Dealers who sell other styles of braces will find it to their interest to buy their stock of ratchets from us.

The price of Barber Braces has not been changed for many years, and we do not anticipate any variation in the near future. Thanking our customers for past favors, we now solicit their future orders.

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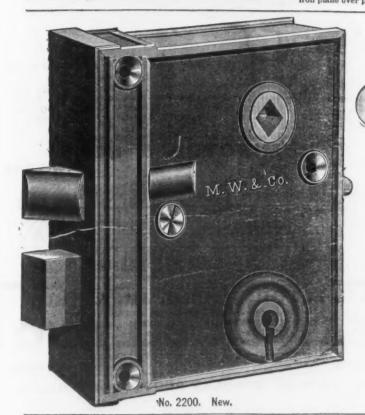
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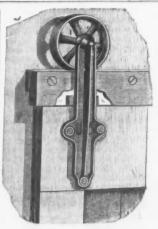
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The Trowbridge Coil Boiler.

Prof. F. R. Honey, of Yale College, gives, in a lecture delivered at New Haven, the following account of a boiler, of which Prof. W. P. Trowbridge, who was formerly pro-fessor of mechanical engineering in the Sheffield Scientific School, and is now Professor of Engineering in the Columbia School of Mines, and Mr. T. W. Mather, a graduate of the Sheffield Scientific School, are the inventors. The importance of devising a small motor was impressed upon Prof. Trowbridge's mind while he was vice-president of the Novelty Iron Works, ten or president of the Noveity Iron Works, ten or eleven years ago, and he was then led to plan what has since been consummated at the cost of many experiments and after many delays. Prof. Trowbridge had concluded, finally, that such a machine, to be of universal use and application, must be a steam motor, and that the possibility of making the steam engine available for a very small power depended entirely upon the consmall power depended entirely upon the con-struction of the boiler. No very light boiler had heretofore been made, which possessed at the same time a high evaporative power, which could bear any pressure that could which could bear any pressure that could possibly be brought upon it up to several thousand pounds per square inch, which would keep its pressure of 100 or 200 pounds per square inch steadily while evaporating water rapidly, which was automatic in the feeding of the water and also of the fuel and which was both light and cheap in construction and absolutely non-explosive. All these qualities the Trownon-explosive. All these qualities the Trow-bridge boiler was said to possess. The evapo-ration of nearly nine pounds of water with one pound of coal or combustible, while at the same time the rate of combustion is kept the same time the rate of combustion is kept as high as twenty-five pounds of coal to each square foot of grate surface, is a performance not exceeded by the best large boilers. Professor Trowbridge's coil boiler gives, in an ordinary trial test, 8½ pounds of water evaporated for 1 pound of combustible, and burns 46½ pounds of coal on each square foot of grate or at that rate as the square foot of grate, or at that rate, as the grate surface is only one foot in diameter. The principal features of the boiler may

be gathered from the following description: The hight of the machine is 3 feet 6 inches area of base, 3 square feet; greatest diameter of boiler, 19 inches; diameter of cylindrical part, 15 inches. Total weight of drical part, 15 inches. Total weight of boiler, pumps and connections, 670 pounds. The triangular grate bars are made to revolve so as to shake out ashes and break up clinkers without drawing the fire. The fire rings which enclose the lower end of the coil, and which are of cast iron, support the sheet-iron casing and fire-clay which surrounds the upper part of the clay which surrounds the upper part of the coil. The upper fire ring is also provided with fire-clay to prevent radiation of heat. The smoke ring which caps the casing is of cast iron and completes the shell. The coil, which, in fact, is the boiler, is made of three-quarter inch (internal diameter) extra strong wrought iron pipe about one eighth of an inch thick, 87 feet in length. It rests upon projections cast in the ash pit. The lower end of the pipe passes to the outside of the shell through a hole, one half of which is in the ash pit and the other half in the is in the ash pit and the other half in the fire ring above it. This end of the pipe is connected with the delivery side of the circulating pump. The upper end of the coil is connected with a wrought-iron pipe 5 inches in diameter and 22 inches in length, which we call the stand pipe. Suspended from the smoke ring is a hopper, which occupies the space within the coil. This hopper, when the boiler is in use, is kept full of coal, and supplies the fire, as in a base-burning stove. The lower end of the hopper is cased in a coil made of pipe of the same diameter as that of which the boiler is formed. This coil is kept full of water, and is connected coil is kept full of water, and is connected with the boiler, forming, in fact, a part of the circulation. The stand pipe, which rests upon the fire ring, is bolted to the smoke ring, and is a reservoir of water and smoke ring, and is a reservoir of water and sterm. It is provided with steam and water gauges and safety valve, whistle and blow-cock, and the lower end is connected with the suction side of the circulating pump. Attached to the stand pipe is an automatic pump, the object of which is to maintain the water level, and at the same time to circulate the water through the coil thereby. water level, and at the same time to circulate the water through the coil, thereby increasing the evaporative efficiency of the boiler. This pump is a very ingenious device and has been patented by Mr. T. W. Mather, who, after many experiments, has brought it to a high state of perfection. It is provided with a Blake steam cylinder and valve, which insure its constant action as long as there is steam in the boiler. Attached long as there is steam in the boiler. Attached to the piston rod cross-head are three pumps, one already referred to—a circulating pump, which draws the water from the stand pipe and delivers it into the coil at every stroke, thereby preventing the pipe from burning out. The speed of this pump is regulated so that at least eight times as much water as can possibly be evaporated is driven through the coil. The automatic feed is maintained by two pumps—one a hot-water pump, which takes the water out of the boiler when it is above the proper level, and the other a cold-water pump, which supplies fresh water to the boiler when it falls below the proper level. A feed which is automatic and always reliable is absolutely necessary in a boiler of this type, in which the water area is small, because, if the feeding were irregular, it would not be many minutes before the boiler became many minutes before the boiler became either filled with water or entirely emptied. It will also be seen that a forced circulation of water through the coil is necessary, for the water which is in the coil is very rapidly turned into steam of high pressure, which occupies the area and prevents any more water from flowing in. It is found that it takes about one-tenth of a horse-power to drive the pumps which compose the automatic feed and that which circulates the water

Total weight, 2075 same, 700 pounds. Total weight, 2075 pounds. The weight of the Trowbridge pounds. The weight of the horse-power automatic boiler, with pump, is 700 pounds; estimated water contained in same, 40 pounds. Total weight, 740 pounds. We see by this estimate that the weight of a Trowbridge automatic boiler and pump, with water, that is, with steam up, is a little over one-third of that of an ordinary boiler and water therein without a pump. An ordinary twelve-horse-power boiler without a pump weighs 2750 pounds; estimated water contained, 1500 pounds. Total weight, 4250 pounds. A twelve-horse power automatic boiler with pump weighs 1200 pounds; estimated water contained, about 100 pounds. Total weight, 1300 pounds—that is, a little less than one-third pounds—that is, a little less than one-third the weight of an ordinary boiler under simi-lar conditions. These figures speak for themselves. The applications of a boiler of this type are very numerous. As examples we may name the following purposes for which a light and safe boiler is of especial value, viz., for farm work in its many branches for deciling houses for printing branches, for dwelling houses, for printing presses, for light machine and wood-working tools, for hoisting and pumping, for fire engines, for street-cleaning purposes, pro-pelling small boats, street cars, &c.; for driving sewing machines, for mining pur-poses; in a word, it may be set up rapidly at any time wherever work is required to be done. The demand for a boiler of this kind comes largely from men who cannot afford the expense of an engineer, who know nothing of steam, but who want a boiler and engine which they can manage themselves one that will run steadily without great cost or liability to damage.

METALLURGICAL NOTES.

MODIFICATION OF THE OPEN HEARTH PRO-CESS AT THE PHOENIX WORKS, GERMANY.

For more than a year it has been the custom at the Phœnix Works, at Laar, Germany, to blow air into the metal-bath to accelerate the decarbonization, this process being effected by means of tuyeres, designed by the chief engineer of the steel works. The arrangement consists generally of two wrought-iron pipes, covered with fire-clay, and fitted at their ends with fire-proof tuyeres The apparatus is easily introduced into the furnace and connected to the Bessemer blast main, the pressure used being generally about 7 lb. per square inch. Since the introduction of this process, it has been found that larger quantities of white pig can be introduced, and this considerably increases the facility of the production of good metal with a small percentage of phosphorus. The more rapid decarbonization enables a larger production of, principally, mild steel of a particularly homogeneous quality. FLUORSPAR IN THE BASIC PROCESS.

Herr Helmholz, of the Bochum Steel Works, gives the results of some trials made at these works for the purpose of testing the efficacy of additions of fluorspar in eliminat-ing phosphorus and sulphur, without using the overblow in the basic process. The following analyses are given to show the re-suit. Herr Helmholz states that the only difficulty experienced was that the tempera-ture was often too low, so that the steel became too cold for casting. It will be no-ticed that attempts were also made to try the effect of chloride of magnesium—without any satisfactory results, however. The analyses are as follows :

	*	:	10 M	No. of Charge
7500 kilos. Ilsede pig	7500 kilos, Hoerde pig	2500 klls. Luxembourg pig.	ayoo kilos, Luxembourg pig and 48 kilos, sulphide of iron	Charge,
360 k fluorspar		30 k. Chl. magnesium 30 k. lime	aco k. lime	Additions.
or To	Pig	A PE	Pig Steel	Sample
eel.	0	tine Steel Steel Pig After disappear ance of carbon	Mappear- Carbon	ple.
	-	-	~	Phosphorus.
	-	-	~	-
9.75	-	1.60	3.00	Phosphorus.
2.75	1.50	1.97	3.05 5.00	Phosphorus.

Mr. James Henderson, of this city, has long since recognized the importance of the use of fluorspar in the basic process, and that the credit of invention is unquestionably

due to him. THE AFTERBLOW IN THE BASIC PROCESS. The afterblow in the basic process con-The atterplow in the basic process continues to be the subject of much experimenting abroad. M. Trasenter, of Liége, Belgium, who has been publishing an interesting series of memoirs on the Thomas-Gil-

which is a short time if the nature of the pig is taken into consideration. A final a dition of 3 per cent. of spiegel holding per cent. of manganese, is then made. I following analyses show the result: A final ad-

Phos. Cast. Mag. Sil. Cinder pig..... 2.59 2.30
Before afterblow. 0.083 tr.
Steel..... 0.095 0.227

The cinder produced contained 19.20 per cent of metallic iron and 6.367 per cent, of phosphorus. The following is a complete

analysis:																							
Silica	 			 			0																7.
Peroxide of																							
Protoxide o																							
Peroxide of																							
Lime																							
Alumina																							
Phosphoric																							
Magnesia																							
Sulphur	 0 0	D	 		0	. 0	0		0	0	٥	0	0	0	0 1	2 6	 	 0	0	0	0	٠	0.2

Cartridge Patents and the Government

During the late war some enterprising men, of whom A. H. Almy, of Norwich, was foremost, organized a company to manufac-ture muskets, and obtained a contract for supplying the government with 50,000. Owing to the rise in the price of steel and other materials, the prosperity of the enterprise, though very great for a time, was short-lived. The business quickly led, however, to a study of the methods of constructing metallic cartridges, and the Norwich Arms Company employed inventors all over the country to devise an improved cartridge. At this time the Norwich people were watching the experiments in this direction made at the Springfield Armory, and the experts at Springfield kept close watch of the doings of the Norwich Company. There are men in the Springfield Armory to-day, therefore, it is asserted, who can verify the important part of this story. Finally a man named John F. Cranston, of Springfield, invented a cartridge which, upon submission to other experts—Mr. Gatling and the Colts, of Hartford, among others—was declared superior to anything else, and the patent, at first issued in 1866, as extended in 1868, was transferred to asyeral Norin 1868, was transferred to several Norwich gentlemen, who organized the "Cranston Centre Fire Cartridge Company." The termination of the war robbed this associa-tion of the market it had in view at first, but it was proposed to submit samples to foreign governments, in order to secure patronage abroad. A large case of cartridges was made up for shipment, but while being lowered into the vessel in New York harbor it fell, owing to a breaking of the tackle, and struck the bottom of the hold with such violence as to smash the box and explode some of the contents. The discouragement of pecuniary loss was less than the blight cast by the unwillingness of steamship companies to carry what was shown to be explosive merchandise, and so which had not yet put any ldings or machinery, but had the company, which had not yet money into buildings or machinery, had these few cartridges made at Hartford by Mr. Gatling, suspended operations. Little has been heard of the matter since until

A few months ago it occurred to Mr. Almy, A tew months ago it occurred to Mr. Almy, who was president of the Cranston Center Fire Cartridge Company, that something might be made even yet out of the patent, and he took it to the Winchester Arms Company, in New Haven, to see what terms could be made. There he was informed that the United States government had been making just such a cartridge as his for making just such a cartridge as his for years, and that it had also been in extensive use in the Russian and German service. Upon further inquiry at the Philadelphis Arsenal, facts were elicited which confirmed the statement. It is estimated that about 70,000,000 of these cartridges have been made, and that the profits lost to the owners of the patent have been about \$5 a thousand, or upward of \$350,000 in all. After taking legal advice and making thorough preparation, therefore, the company have brought suit in the United States Circuit Court, at Hartford, asking for a temporary injunction stopping the manufacture of these cartridges for the present, a permanent injunction and subpoenas to bring proper witnesses and tes-timony to establish the facts.

The feature of the cartridge on which the litigation turns is the method of fixing the priming or fulminating powder in the shell. It was at first proposed to make the shell of brass, which would be soft enough to admit of "swedging in" the priming. But it was found, after a time, that the combination (copper and zinc) in the metal developed electricity which spoiled the fulminate in time. It was then found necessary to use hard copper for the shell. Having laid the fulminate in the centre of the flat bottom of the shell (standing it open end up), an "auvil" or thin metal disk was inserted into the tube and brought down snug before the ordinary gunpowder was filled in. The ful-minate being thus confined between two metallic surfaces, is easily discharged by the concussion of the musket hammer on the rear end of the shell. But it was then found that the explosion of the fulminate blew out the anvil too easily for the success ful ignition of the other contents of the shell, It was to meet this difficulty that the Cranston invention was designed. It is done in a very simple manner. The anvil was changed from a flat disk to a cup about three-eighths of an inch high, made to fit tightly when rammed into the shell against the fulminate. But to hold it more firmly in place a narrow indentation or line is made n the circumference of the shell, about three-eighths of an inch from the rear end, which causes a corresponding projection around the inside sufficient to hold the cap

At a recent exhibition of Dr. J. H. Mc-Lean's "peacemakers," at the Washington Navy Yard, some fairly successful trials were made. The "General Sherman," a feed and that which circulates the water through the boiler, and it is easy to see that this power is wisely expended on account of the increased efficiency which is given to the heating surface by bringing a large volume of water in contact with it. Another advantage gained is that the pipe, if kept full of water, cannot get red-hot, and, therefore, will last considerably longer than would be possible under other circumstances.

The weight of an ordinary five-horse-power holler is 1375 pounds, without a pump; estimated water contained in the

Business at the New York Custom House.—Collector Merritt, of this port, has forwarded to the United States Senate a voluminous document in reply to a call for interpretation of the Emperor. A the department, after investigation, deemed it proper to authorize a temporary augmentation of the force employed. The results have amply justified this action as a wise measure of economy, as will be seen by the following exhibits taken from the official records:

AMOUNT OF BUSINESS TRANSACTED AT THE PORT OF NEW YORK IN THE CALENDAR YEARS 1876, 1878 AND 1880.

	Steamers from Foreign Ports. 978 1,310 1,892	Value of all Imports. \$318,648,666 362,522,088 539,386,776	Revenue Collected. \$95,827,511 93,633,744 142,060,114
POUNDS	OF IMPORTED G	OODS WEIGHED OF THE SAME.	AND COST OF
	Number of Lbs. Weighed. 2,114,874,065 2,187,324,124	Total Cost. \$301,891 197,467	Cost per Ton of 2,000 Lbs. 28.54-100C. 18.5-100C.

5,216,393,430 The number of packages received in public store were, in 1876, 154,201; in 1878, 178,032; in 1880, 240,013. This sudden increase of business, the report continues, has been superiores. has been sustained.

The Moniteur Belge publishes the follow ing details of the exports and imports of iron and steel of Belgium during the years 1879

IMPORTS.		
	188a.	1879.
(Crude cast	1,517	202
Steel Bars, plates or wire		3,680
/ Manufactured	1,330	557
Pig iron		*****
Scrap iron	19,517	9
Wrought, (Wire	4,170	2,298
drawn, Rails	1,001	898
or rolled Plates		177
iron. Other descriptions		5,323
Manu- (Anchors and chains	146	Egx.
factured { Nails	487	388
fron. Other descriptions	3,511	2,841
Iron castings	11,033	1,392
Ores	921,784	614,386
EXPORTS.		
man Oreaco		
(Crude cast	940	414
(Crude cast	940	414
(Crude cast		
Steel Crude cast	43,955	43.572
Steel { Crude cast	43,055	43.572 3,231
Steel	43,055 2,582 E1,742	43,572 3,231
Steel Crude cast	43,055 2,582 11,742 29,885	43.572 3.231
Steel { Crude cast. Bars, plates or wire. Manufactured. Manufactured. Wrought, Wire. drawn, Rails. or rolled Plates.	43,055 2,582 11,742 29,885 4,560	43,572 3,231 3,393
Steel	43,055 2,582 11,742 29,885 4,560 28,124	43,572 3,231 3,393 29,854
Steel { Crude cast. Bars, plates or wire. Manufactured. Manufactured. Wrought, Wire. drawn, Rails. or rolled Plates.	43,055 3,582 11,742 29,885 4,560 28,124 32,303	43,572 3,231 3,393 29,854 23,204
Steel	43,055 2,582 11,742 29,885 4,560 28,124 32,303 102,339	43,572 3,231 3,393 29,854 23,204
Steel	43,055 2,582 11,742 29,885 4,560 28,124 32,308 162,339	43,572 3,231 3,393 29,854 23,204 154,628 8
Steel. (Crude cast. Bars, plates or wire. Manufactured. Scrap iron. Wrought, Wire. drawn, Plates. Plates. Other descriptions. Manu- factured Anchors and chains. iron Other descriptions.	43,055 2,582 11,742 29,885 4,560 28,124 32,308 102,339	43,572 3,231 3,393 29,854 23,204 154,028 8 9,336
Steel. (Crude cast. Bars, plates or wire. Manufactured. Scrap fron. Wrought, Wire. drawn, Rails. Other descriptions. Manu-Anchors and chains. factured Nails. iron (Other descriptions. ron castings.	43,055 3,582 11,742 29,885 4,560 28,124 32,303 102,339 10,871 20,246 14,538	43,572 3,231 3,393 29,854 23,204 154,628 8 9,336 17,389 12,959
Steel	43,055 3,582 11,742 29,885 4,560 28,124 32,303 102,339 10,871 20,246 14,538	43,572 3,231 3,393 29,854 23,204 154,028 8 9,336 17,389

The United States Supreme Court, in an appeal of the Pacific Mail Steamship Company from the court of claims, have given pany from the court of chains, have given judgment in the amount of \$541,666.66. The claim was for service in carrying the mails between San Francisco and China. The court below decided that the steamers emploved were not suitable, but on final appeal the opinion is reversed.

forwarded to the United States Senate a center was answerable not to the Received a voluminous document in reply to a call for information respecting the civil service, in which he says: On account of the increase in the volume of public business at this port the department, after investigation, deemed superfluous officer. He declared that if his agreement with the heads of departments was ever disturbed, it should invariably said: "Both of us can no longer remain in office." His sole guiding-star was the question, What good does it bring to the Father-

> The Montreal Herald takes issue with the ministerial organs, which find everything lovely in the present condition of Canada. The editor says: "Now, since our exports The editor says: "Now, since our exports of manufactured goods are decreasing, and our imports of the same class of goods are rapidly increasing, we fail to understand where our home manufacturers are to find a market. The competition in our market between imported and home-manufactured goods is now greater than ever; or, in other goods is now greater than ever; or, in other words, more foreign goods are being "slaughtered" in Canada than ever was known before. The imports for January are no exception. Let our ministerialist friends take the imports for any one of the past six months, and they will find that the result is about the same." The views of parties in the Denision in research to the tailf were the Dominion in regard to the tariff were never more widely at variance than now.

The import and export statistics of France during the years 1879 and 1880, of iron and steel are as follows in metric tons:

1	IMPORTS.	1879.
,	Pig iron 172,373	157,038
	Wrought iron and plates 66,055	62,199
	Machinery and manufactured	6,458
	for naval construction 68,080	«s.86»
	Ores	941,811
	EXPORTS.	
	Exported under acquit à cau- tion-wrought iron, pig and	
	plates	91,814
1	of art	64,200
	Ores 114,796	66,652
1	Suit has been brought in the	Timited

Suit has been brought in the United States Circuit Court for Connecticut against Colonel John M. Brennan, commandant at Fort Trumbull, New London, representing the United States government, by a corpora-tion called Cranston Center Fire Cartridge Company, for violation of a patent covering a method of fixing the priming in a metallic cartridge shell. The patent has long lain dormant, the company having suspended operations more than 10 years ago. It is alleged that the government has made 70,000,000 of cartridges in violation of the patent, and damages are claimed to the amount of nearly \$500,000.

A Pittsburgh firm have purchased a large interest in what is know as the Common-wealth Iron Ore Mine on Lake Superior, and the entire product is likely to be consumed in that city.

Prince Bismarck, in the discussion of the German budget, defended his policy with much spirit. He maintained that he was no dictator. Furthermore, he affirmed that no



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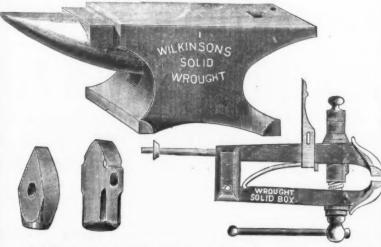
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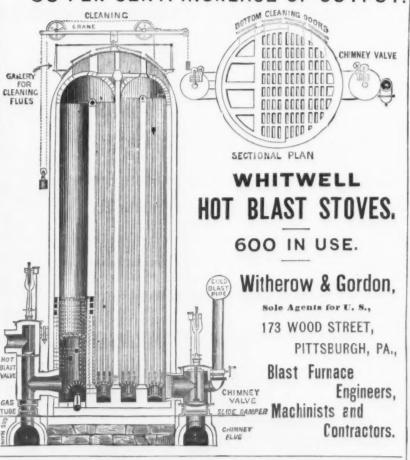
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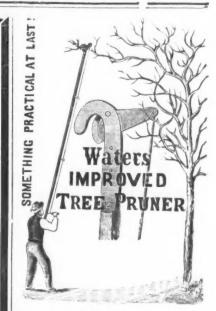


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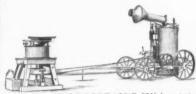
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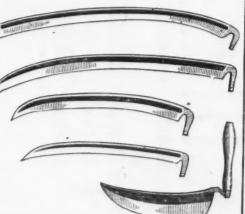
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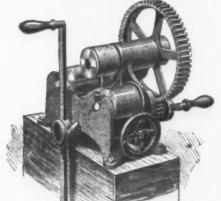
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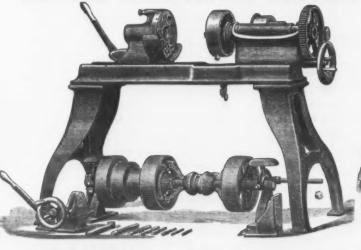
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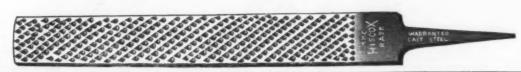
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DOOR LOCKS AND HARDWARE,

BRONZED IRON AND BRONZE METAL DOOR TRIMMINGS, BUTTS AND HARDWARE.

CAST BUTTS, BOOK BOLTS, WELL WHEELS, FLUSH BOLTS, SHUTTER BOLTS, PAD LOCKS.

BARN DOOR HANCERS, & RAIL, CRINDSTONE FIXTURES, SCREW & SIDE PULLEYS, NOISELESS PULLEYS, HAY FORK PULLEYS, SHELF BRACKETS,

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Having largely increased our facilities and line of goods, we invite the attention of the rade.

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To Ail Whom it May Concern:

To-day a decree in my suit against G. T. Fisher & Co, of Detroit, for an infringement of my patent, was made and entered, of which the following is an extract:

At a session of the Circuit Court of the United States for the Eastern District of Michigan, held at Detroit, &c, on Wednesday, the 8th day of December, 1880.

NELSON LYON

Against

Albany, N. Y., Dec. 8, 1880.

GUYON T. FISHER, et al. \\
It is ordered, adjudged and decreed, that the act entitled "An act for the relief of Nelson Lyon and Jeremiah S. James." passed by Congress and approved April 1, 1880, &c., is a good, valid and constitutional act.
That the original patent, bearing date July 9, 1872, and numbered 128,842, granted and issued to Joseph
Barsaloux, Jeremiah S. James and Nelson Lyon, when corrected by the Acting Commissioner of Patents, as
directed by said act, was a good and valid patent.

That the said Joseph Barsaloux was the original and first inventor of the improvements in metallic stiffeners for boot and shoe heels mentioned and described in said letters patent.

That the Reissued Letters Patent No. 918 dated May 11. 1850, granted to said Nelson Lyon for an improvement is metallic heel stiffeners for boots and shoes, originally patented as aforesaid, is a good and valid patent; that said Lyon is exclusively possessed of said Letters Patent and the invention thereby secured.

That the defendants, G. T. Fisher & Co., and each of them, have infringed upon the said patents and upon the exclusive rights of said Lyon under the same.

That said Lyon receive of said defendants all the profits, &c., they have made, and in addition thereto all

It is also further ordered, adjudged and decreed, that a perpetual injunction be issued against said defendants, according to the prayer of the said complainant's bill.

You are also hereby notified that the perpetual injunction has been issued and served on the defendants.

All questions as to damages and settlements in relation to infringements under my

All questions as to damages and settlements in relation to infringements under my patents must be addressed to and made with my attorney, WILLIAM H. KING, in my care, at the above address.

NELSON LYON.

EXCELSIOR LAWN MOWER



Side Wheel Pattern.



Roller Pattern.

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We make Seven Sizes of Roller Mowers and Six Sizes of Side-Wheel Mowers. We claim for our Mowers

Perfect Work, Light Draft and Simplicity.

We have received many first premiums in competitive trials with other Mowers, both in this country and a road. We have special patterns of Mowers for export, meeting the requirements of every market. Our new Horse Mower is conceded to be the Lightest and Best Horse Lawn Mower ever made. N. B.—Horse and Hand Lawn Mowers are alike guaranteed in all respects. Send for Illustrated Catalogue. Address

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ADJUSTABLE JAWS,
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ADAPTED TO ALL KINDS OF VISE WORK.
HALL MFG. CO., 23 DEY ST., NEW YORK.
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PENFIELD BLOCK WORKS, Lockport, N. Y., U. S. A. GEORGE C. TAFT,

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Axle Clips, &c.

COLEMAN EAGLE BOLT WORKS. WELSH & LEA, Philadelphia, Pa.

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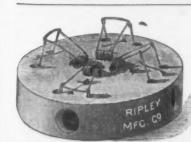
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For Blacksmiths' and Carriage Makers' Use.



This cut represents my No. 2 Improved Drill, louble geared, so arranged that by moving the trank from A to B it will give a slow motion for eavy drilling to the drill spindle.

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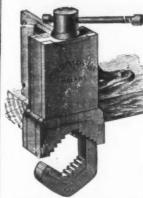
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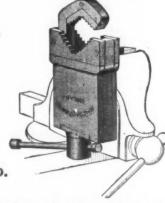
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WEYMOUTH'S PATENT.



This knife is the best in use for cutting down hay and straw in mow and stack, cutting fine feed from bale, cutting corn stalks for feed, cutting peat and ditching marshes.

The blade is best cast steel, spring temper, easily sharpened, and is giving universal satisfaction. A few moments' trial will show its merits, and parties once using it are unwilling to do without it. Its sales are fast increasing for exports as well as home trade, and it seems destined to take the place of all other Hay Knives.

They are nicely packed in boxes, one dozen each of 50 pounds weigh suitable for shipping by land or water to any part of the world.

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For sale by the Hardware Trade generally.

CARDEN OR FARM BARROW, With Jacobs' Patent Wheel.



SET UP FOR USE

These Barrows are made with double frames, bolted together, iron braced, and so constructed that by removing one bolt (the axle) and two nuts, can be folded flat down (see cut), and shipped at lowest rate of freight. But a moment's time is required to set up for use.

We also manufacture a full line of

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COG WHEEL Ice Cream

Freezers.

Torrey's Door Springs. S. ROEBUCK & CO., Manufacturers,

164 Fulton St., New York. THE IDEAL COFFEE PCT.



The engraving snows that the "Ideal" is the most perfect, simple and complete pot ever produced, and as such is the best selling pot in the market. It sells on its own merits. By its use the coffee is always regular, of the same quality, strength, and perfectly clear. A child can make better coffee in this pot than can an adult by the old method of boiling. It is without doubt the best pot in the world to day, and you can sell them. They are used and recommended by Mrs. President Hayes, Mrs. Bishop Simpson, Hon. John Jay, Gen. E. Flint, California, and by everybody who has used one.

Prices: Polished Tin, per doz. 3 pt., \$7.80; 5 pt., \$0.20; 7 pt., \$13.20; 9 pt., \$1.5. Nickel Silver, 3 pt., \$15; 5 pt., \$19.80; 7 pt., \$24; 9 pt., \$27. The nickel silver pots are nickel-plated outside and silver-plated inside. They are very handsome. Discount 25 per cent. Send for circular or 50 cents for a 5-pint sample pot.

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BRASS PAD LOCKS For Railroad Switches, Freight Cars, and the Hard ware Trade. All sizes, with Brass and Steel Keys with and without chains.

Patent Horizontal Rim Cylinder Night Latch.

Self-adjusting to doors of any thickness, with Patent Stop and Drawer Back Knob RIGHT OR LEFT HAND.

PASSENGER CAR LOCKS, Bronzed, Nickel-Plated and Japannel Catalogues and Samples sent upon application. BROOKLYN, N. Y.

PROVIDENCE STEAM TRAP COMPANY, Manufacturers of Newton's Patent Steam Trap, Compensating Valve, Oscillating Furnace Bars, and Furnace Economisers.

To Manufacturers, Bleachers, Dyers, and all Users of Steam: We wish to call your special attention to our Patent Steam Thap, acknowledged by practical engineers and manufacturers to be the best, simplest, most effective and durable Trap ever brought before the public. The simplicity of this Trap consists of doing away with all expansions and contractions, no glands or stuffing boxes, or bolts of any description required; no compound cylinders and no copper rods. The cover can be removed at any time to see it work; and if required the discharged water can be elevated from two to thirty feet, so that it can be used for other purposes. They will last from thirty to forty years. As regards frost and snow it makes no difference, as we have had and still have one working in the open air at Washington Mils, Lawrence, Mass., and it has done its work well, never having had any trouble with it, and bids defiance to all weather. That they have been thoroughly tested can be seen by the testimonials given below, of the few that have come to hand: TESTIMONIALS.

Washington Mills, Lawrence, Mass., November 18, 1880.

Mr. R Newton.—Dear Sir: The Steam Trap we bought of you last August works admirably. Please send us another as soon as possible. Yours truly,

JAMES B. SINER, Mech. Supt.

Office of Washington Mills, Boston, December 24, 1889. Providence Steam Trap Co.—GENTLEMEN: Please forward to Washington Mills as soon as possible six (6) X-inch Traps and send bill to me.
Yours, truly.
HENRY F. COE, Treas.

Clyde Bleachery and Print Works, River Point, R. I., January 17, 1881.

Mr. R. Newton.—Dear Siz: The Steam Trap we had of you is in successful and very satisfactory operation. Its simplicity in construction and undoubted durability will commend it to all who are in want of a superior Steam Trap. We shall order more when in need of any. Yours, truly,

S. H. GREEN & SONS.

Kendall Manufacturing Co., Providence, R. I., Feb. 1, 1881. Providence Steam Trap Co.—Gents.: We have used one of your Steam Traps for some time and would say that we find it gives perfect satisfaction. Yours, truly, ROBERT NEWTON, C. E. M. E., Inventor and Patentee, Providence, R. I.

A. & W. Sprague Mfg. Co., Cranston Print Works, R. I., Jan. 15, 1880.

Mr Robert Newton—Dean Sir: The Steam Traps we bought of you work first-class and give every satisfaction, and appear to be very durable. We think them the best Steam Trap that we have ever had. When in want of more will write you.

I remain, yours, truly, THOMAS BRISTOW, Supt. Cranston Print Works.

Providence, R. I., December 18, 1880,

Mr. Newton.—Dear Sir: We have your Steam Trap working satisfactorily, and
can conscientiously recommend it to all. Yours, very truly.

B. COLLINGHAM, Supt. Atlantic Mills.

OSCILLATING FIRE PATENT BARS.

We wish also to call your attention to R. Newton's Patent Oscillating Fire Bars, which for durability, economy and application are acknowledged by all practical engineers that have seen them up to the present time to be the best ever brought before the public. This invention the patentee has labored at more or less since 1851. These bars have long been wanted, and their use will at once prove their efficacy as an economiser of fuel and labor. These bars can consume from four to twenty-six pounds of coal per square foot of grate, per hour, and not warp; and the apertures can be kept clean so that they can get a regular supply of oxygen, which is the lifegiving power of caloric. They can be applied to all kinds of boiler surfaces (except vertical), and can be fitted to the furnaces in about five hours. Testimonials can be forwarded, if required, to show that they are now in use in some of the largest firms in the world.

SOME OF THE ADVANTAGES: These bars allow the use of inferior coal; evaporating power is greatly increased. This is a great boon where boiler power and space is limited. This advantage cannot be over-estimated in the case of marine boilers. The oscillating of the fire bars both cuts and lifts the slug, and clears the apertures at the same time. The bars give four motions in one oscillation, and cannot get out of order. They are also free of expansion and contraction, both longitudinal and transversal, and however careless the stoker may be he cannot leave them so as to take any harm. They are so cast, and of such metal, that they are the most durable bar ever brought into use. All now in use are very much approved. They are very simple and cannot get out of order. Their cost is so reasonable that they come within the reach of all. The company are now granting licenses to several firms to make and apply them, and are open to arrange with other parties.

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ROBERT NEWTON, C. E. M. E., Inventor and Patentee

All communications should be addressed to PROVIDENCE STEAM TRAP CO., P. O. Box 1213, Providence, R. I.,

ATWATER MFG. CO., Manufacturers of Carriage Hardware.

Plantsville, Conn., Feb. 7, 1881.

Messrs. BEECHER & PECK:

New Haven, Conn.

GENTLEMEN: We have been using several of your Drops and Lifters for years, and are so well pleased with their working that you may make us one No. 7 Drop and Lifter, with Hammer, weighing 1250 pounds. We consider them the best Drop and Lifter made. Yours truly,

(Signed)

ATWATER MFG. CO.

C. COWLES & CO.,

Manufacturers of and Dealers in Carriage Hardware and Trimmings.-Carriage Lamps a Specialty.

New Haven, Conn., Feb. 22, 1881.

Messrs, BEECHER & PECK:

GENTLEMEN: We have had your Drop Presses in use for over 25 years, and after investigation (about one year since) satisfied ourselves it was not for our interest to make any change, therefore ordered three more. Sincerely yours,

R. P. COWLES, Prest.

Peck's Patent Lifter is the only Power Drop Lifter that has its parts cushioned. Being thus cushioned, they are the most durable Lifter in the market.

Our New Illustrated Catalogue sent on application.

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THE OHIO GRINDSTONE CO. GRINDSTONES

SUITABLE FOR ALL PURPOSES AND IN ANY QUANTITY.

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CROCKER'S REVERSIBLE, SELF-PACKING & SELF-CLEANSING FILTER

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Warranted Never to become Inoperative.

Always as Easily Reversed as when first put into use.

The Most Perfect and Effective Filter and Purifier yet Produced.

Made in three sizes for household use, and from 10 inch to 30-inch diameter for use on BOILERS and in MANUFACTURING ESTABLISHMENTS.

Do not mistake this for any other reversible or revolving Filter. The Crocker is an entirely new invention, patented as above.

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Manufacturer of Razor Strops. Office and Factory, 31 Southbridge St., Worcester, Mass.



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Our 7 X Combination is Superior to any other in the market Our Strops, in quality, style and variety are unequaled, and we have facilities for production greater than any other manufacturer in our line. Price Lists on application.







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Smith & Sayre Mfg. Co 21 Cortlandt, N. Y47	B
Boker Hermann & Co., 101 Duane, N. Y	
Cutlery, Manylarturer of. Burkinshaw Aaron, Pepperell, Mass	
Unilers, Manufacturers of. Burkinshaw Aaron, Pepperell, Mass	H
	B
Phila Smeiting Co., 12th and Noble Sts, Phila,19 Differential Pulley Blocks. Yale Lock Mfg. Co., 43 Chambers, N. Y	le
Haight Jos. Portchester, N. Y	In In
Dog Collars. Medford Fancy Goods Co., 96 Duane, N. Y	L
N. Y De-oxydized Bronze Metals. Phila Smelting Co., 12th and Noble Sts, Phila, 10 Differential Puttey Blocks. Yale Lock Mfg. Co., 43 Chambers, N. Y. 3 Dinner Pail and Lanterns. Haight Jos., Portenester, N. Y. 48 Discount Tables. Jennings S. H., Deer River, Conn. 22 Leigh E. B., St. Louls, Mo. Dog Collars. Metford date Springs. Bartlett Frederick, Freeport, Ilis. 42 Roebuck S. & Co., 16 Fulton, N. Y. 33 Van Wagtoner & Williams, 82 Beekman, N. Y. 48 Boor Betts.	
Door Boits. Ives Hobart B. New Haven, Ct	1x
Roebuck S. & Co., 164 Fulton, N. Y. Yan Wagoner & Williams, 82 Beekman, N. Y. 48 Boor Holts. Ivea Hobart B., New Haven, Ct	1
Thorne, Do raveli & Co., Greennield, Mass	1
Doscher M 8s Chambers, N. Y 36	1

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	THE IRON A
Slevator Buckets	Rome Merchant Iron Mills, Rome, N. Y. Rowland James & Co., 220 N. Delaware ave., Ph Rowland James & Co., 220 N. Delaware ave., Ph Rowland Wm. & Harvey, Philadelphia Shoenberger & Co., Pittsburgh, Pa. The Passaic Rolling Mill Co., Paterson, N. J. Ulster Iron Works, 18 Wall, N. Y. Williams. Long & McDowell, Pittsburgh, Pa. Wood Alan & Co., Arch, Philadelphia, Pa. For & Co., Pittsburgh, Pa. Boynton Geo. A., Po Wall, N. Y. Gerry Allston & Co., 63 Wall, N. Y. Gerry Allston & Co., 63 Wall, N. Y. Gallaudet P. W., 28 x Wall, N. Y. Gallaudet P. W., 28 x Wall, N. Y. Harry A. G. Pittsburgh, Pa. Lon, Charconi, Warm or Cold Biass, Logan Iron & Steel Co. Philadelphia, Lundell Chas G. (Swedish), Boston, Mass, Quincy John W., 68 William, N. Y. Hoor Commission Merchants, Balley J. F. & Co., 52 Wall, N. Y. Heberton & Co., of Chambers, N. Y. Heberton & Co., of Chambers, N. Y. Heberton & C., of Chambers, N. Y. Heberton & C., of Chambers, N. Y. Lundell Chas, G., Boston, Mass, Sohr J. J., 430 Wallut, Philadelphia Richardson J. O., 32 Dock, Philadelphia, Richardson J. O., 32 Dock, Philadelphia, Abeel Brothers, 100 South, N. Y.
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Lundell Chas. G., Boston, Mass	P
Abeel Brothers, 190 South N. Y. 4 Adams Hugh W., 16 Pine, N. Y. 4 Bonnell, Botsford & Co., Youngstown, U. 5 Borden & Lovell, 70 and 71 West, N. Y. 4	P
Mohr J. J., 430 Walnut, Philadelphia. 5 Richardson J. O., 322 Dock, Philadelphia. 5 Wister L. & R., 323 Walnut Phila. 5 Fron Dealers. Aboel Brothers, 190 South N. Y. Adams Hugh W., 65 Pine, N. Y. Bonnell, Botsford & Co., Youngstown, O. 6 Borden & Lovell, 70 and 71 West, N. Y. 4 Carmichael & Emmens, 190 and 132 Cedar. N. Y. 4 Carmichael & Emmens, 190 and 132 Cedar. N. Y. 4 Carmichael & Emmens, 190 and 132 Cedar. N. Y. 4 Carmichael & Emmens, 190 and 132 Cedar. N. Y. 4 Carmichael & Emmens, 190 and 132 Cedar. N. Y. 4 Carmichael & Co., 160 South, N. Y. 5 Espession Bros & Co., 160 South, N. Y. 5 Espession Bros & Co., 160 South, N. Y. 5 Harrison & Gillicon, 524 056 Water, N. Y. 4 Hoffman J. W. & Co., 26 S. Fourth, Philadelphia. 5 Judson B. F., 47 and 459 Water, N. Y. Kana C., Pittsburgh, Pa. 4 Lundberg Gustaf., 38 Killy, Hoston, Mass. 4 Lundel Chas, G. (Swedish), Boston, Mass. 4 Page, Newell & Co., Doston, Mass. 4 Page, Newell & Co., Doston, Mass. 6 Pierson & Co., 24 Broadway, N. Y. 9 Page, Newell & Co., Doston, Mass. 6 Pierson & Co., 27 Broadway, N. Y. 4 Richards D. W. & Co., 20 Mangin, N. Y. 4 Shimer & Co., Philadelphia, Pa. 5 Wallace Wm. H. & Co., Albany and Washington Wallamson James & Co., 50 Well, N. Y. 4 Walliamson James & Co., 60 Well, N. Y. 4 Walliamson James & Co., 60 Wall, N. Y. 1 Fron, Pig, Importers of, 191 Pig, N. R. 1 Lundell, Chas, G. (Swedish), Boston, Mass. 4 Williamson James & Co., 60 Wall, N. Y. 1 Fron, Pig, Importers of, 191 Pig, N. R. 1 Lundell, Chas, G. (Swedish), Boston, Mass. 4 Williamson James & Co., 60 Wall, N. Y. 1 Fron, Pig, Importers of, 191 Pig, N. R. 1 Lundell, Chas, G. (Swedish), Boston, Mass. 4 Williamson James & Co., 60 Wall, N. Y. 1 Fron, Pig, Importers of, 191 Pig, N. R. 1 Lundell, Chas, G. (Swedish), Boston, Mass. 4 Williamson James & Co., 60 Wall, N. Y. 1 Fron, Pig, Importers of, 191 Pig, N. R. 1 Lundell, Chas,	P
Fullarton J. F., Bennett Building, N. V. 4 Harrison & Gilloon, 528 to 58 'Water, N. Y	P
Lissberger S. A., 529 E. 10th, N. Y. Lundberg Gustaf, 38 Kilty, Boston, Mass	P
Naylor & Co., 99 John, N. Y. 40 Ogden & Wallace, 8, 87, 89 and 91 Elm, N. Y. 4 Page, Newell & Co., Boston, Mass. 6 Fierson & Co., 24 Broadway, N. Y. 4	
Guincy John W., 98 William, N. Y. 4 Richards D. W. & Co., 92 Mangin, N. Y. 4 Shimer & Co. Philadelphia, Pa. Wallace Wm, H. & Co., Albany and Washington	R
streets, N. Y. Warner A. B. & Son, 28 and 29 West, N. Y. Williamson James & Co., 69 Walt, N. Y. Waitney A. R., & Hudson, N. Y. Land, Phys. Jamortes of	
Bellaire Nali Works, hellaire, O. 6 Clark E. W. & Co., Philadelphia, Pa. 5 Lee James & Co., 72 Pine, N. R. 4 Lundell, Chas. G. (Swedish), Boston, Mass. 4	R
williamson James & Co., 69 Wall, N. Y. 1ron, Sheet, Manyfacturers of, Hoopes & Merry, 547 W. 15th st., N. Y. 6 Lefferts Marshall & Co., 90 Beekman, N. Y. 6 Moorhead & Co., Pittsburgh, Pa. 41	R
Wood W. D. & CO. Pittsburgh, Pa	
	R
Lathe Dogs. Coles H. H. & Co., Philadelphia, Pa	R
Disston Henry & Sons., Philadelphia	8
Bohannan Wilson, Broadway and Kossuth, Brook- lyn, E. D. Branford Lock Works, Branford, Conn. 33 Branford Lock Works, Branford, Conn. 36 D. K. Miller Lock Co., Philadelphia, Pa. 16	8
Locks and Knobs.—Mansfacturers of. Bohannan Wilson, Broadway and Kossuth, Brook Ivn. E. D. Branford Lock Works, Branford, Conn	8
Smith & Egge Mfg. Co., Bridgeport, Conn	8
Cooke & Co., 6 Cortlandt, N. Y. Forsatth S. C. & Co., Manchester, N. H	8
Lyon E. & Co., 470 Grand, N. Y. 46 Monawk & Hudson Mfg. Co., Waterford, N. Y. 37 Pittsburgh Mfg. Co., Pittsburgh, Pa 46 S. A. Woods Machine Co., 91 Liberty, N. Y. 8	
Seiters Wm. & Co. Phila and 79 Isberty st., N. Y. 47 Stokes & Parrish, Philada., Pa	3
Machinery (Barnes's Foot Power.) Little Chas. E. 45 Fulton, N. Y	8
Blaisdell P. & Co., Worcester, Mass. 45 Brooks A. G. & Winebrener, Philadelphia, Pa. 22 Bullard E. P. 14 Dey, N. Y. 22 Cooke & Co., 6 Cortlandt, N. V. 47	10
Geo. Piace Machinery Agency, 121 Chambers. N. Y. 22 Harrington E. & Son. 15th st. and Pennsylvania ave., Philadelphia Pa	20 20
York & Smith, Cleveland, O	8
Wickersnam & Co., Philadelphia, Pa. 44 Mailets. N. Y. Handle and Mallet Works, 456 E. Houston	20 30
Metal Polish. Gardner Fred. W., 1164 Broadway, N. Y	20 00 00
Dickerson, Van Dusen & Co., 29 and 31 Cliff. N. Y., 2 Goldsmith Moses & Son, Charleston, S. C., 6 Naylor & Co., 99 John, N. Y., 40 Northrop A. C., Waterbury, Conn., 2 Phelps, Dodge & Co., Cliff, bet. John & Fulton, N. Y. 2 Phosphor Bronze Smelting Co., Limited, 2038 Washington av., Phila.	8
Phelps, Dodge & Co., Cliff, bet. John & Fulton, N. Y. 2 Phosphor Bronze Smelting Co., Limited, 2038 Washington av., Phila. 7 Purves A. & Son, cor. South and Penn, Phila. 5 Quincy J. W., 98 William, N. Y. W. S. Son, Phila. 5 Schoenberg Metal Mig. Co., c28 & 39 E. 20th, N. Y. 2 Starr John. Halifax, Nova Scotla. 2 Metalls, Perforated Sheet. 2	8
Harrington & Ogleshy Chicago III	(E) (E)
Metailargista. Scoth, Garrett & Blair, 510 Chant, Philadelphia 5 Gritton J. Biodgett, 320 Walnut, Philadelphia 37 Mills. Portable. North Carolina Mill Stone Co., Westminster, Md 29 Minchey Knives.	E
Phila. Novelty Mfg. Co., 821 Cherry, Phila., Pa37 Mine Lamps. Leonard Bro:, Scranton, Pa	S
Miners' Candles. Makers of. James Boyd's Sons. to and to Franklin, N. Y	No.
Molding Sand. 32 Molding Sand. 33 Molding Sand. 3 Mouse Fraps. 3 Mouse Fraps. 5 Mouse Fraps. 6 Mouse Fraps. 7 Mouse	T
No line Bellaire Nail Works, Bellaire, Obio	
Wareham Nail Co., So. Wareham, Mass. 17 Zug & Co., Pittsburgh. Pa	R
Condit, Hanson & Van Winkle, Newark, N. J 20 Zucker & Levett, 540 to 541 West 10th at., N. Y 35 Norway Shapes, Sollers of. Naylor & Co., 90 John, N. Y 40	
Nuts, Bolts, etc., Makers of, Allentown Rolling Mill Co. Allentown, Pa. 5 Atwood Safety Nut Co., Springfield, Mass. 44 Haskell W. H. & Co., Pawtucket, R. I. 32	
Russell. Burdsall & Ward. Port Chester, N. Y	2
Con Chase tooth and Waylow Divon V V	5
Oresa. Jackson Iron Co. Cleveland, O. Jackson Iron Co. Cleveland, O. Fullman J. Wesley, 407 Wainut Philadelphia. Read D. W R. & Co., 2016 Walnut, Philadelphia. Ornamental Iron and Brisse. Phila. Smelting Co., 12th and Noble Sts. Phila.	-

Pines. Fittings. etc Makers of. MoNab & Harlin Mig. Co to John. N. Y	Steam Pumps, dec., Manufacturers of. Cameron A. S., Esst 23d, N. Y. Clayton Steam Pump Works, 14 and 16 Water st. Brooklyn, N. Y. Grane Bros. Mfg. Co., Chicago. III
McNeal A. H., Burlington, N. J.	Brooklyn, N. Y. Crane Bros. Mfg. Co., Chicago, III.
Mellert Foundry and Machine Co., Limited, Reading, Pa	McGowan John H. & Co., Cincinnati, O
mellert Foundry and Machine Co., Limited, Reading, Tron Works, Philadelphia, Pa. 42 Reading Iron Works, Philadelphia, Pa. 5 Wood R. D. & Co., ac Chestnut, Philadelphia. 13 Wyckoff A., Elmira, N. Y. 20 Plane I rous. Manufacturers of, Ruck Bros., Millburv. Mass. 7 Globe Mfg. Co., Middletown, Conn. 7 Greenfield Tool Co., Greenfield, Mass. 17 Planes. Wanufacturers of. 17	Storer G. W., 122 N. 3d, Philadelphia
Wyceou A., Eimira, N. Y. 20 Plane I rous. Manufacturers of. Buck Bros. Millbury Mass. 7	
Globe Mfg. Co., Middletown, Conn	Providence Steam Trap Co., Providence, R. I
Planes. Minufacturers of. Greenfield Tool Co., Greenfield, Mass. 17 Lafiln Mig Co., Wostfield, Mass. 27 Stanley Rule and Levei Co., 29 Chambers, N. Y. 3	Hobson Francis & Son, 97 John, N. Y
Laflin Mfg. Co., Westfield. Mass	Pierson & Co., 24 Broadway, N. Y
	Jones B. M. & Co., 11 and 13 Oliver, Boston, Mass. 48 Steel Manufacturers.
Hall, Elton & Co., 7s Chambers, N. Y	Albany & Rensselaer Iron & Steel Co., Troy, N. Y. 40
Clumbers' Materials, Manufacturers of. &vernart Jas. M. Soranton Ps	Jones B. M. & Co., it and is Oliver, Doston, Mass. 48 Steel Manuiacturers. & Steel Co., Troy, N. Y. 40 Atha, Benjamin & C., 11 Foorl, N. Y. 40 Atha, Benjamin & C., 12 Foorl, N. Y. 40 Atha, Benjamin & C., 12 Foorl, N. Y. 40 Cleveland Rolling Mill Co., Cleveland, O. 40 Gautier Steel Co., Ld., Johnstown, Pa. 52 Miller, Metcalf & Parkin, Pittsburgh. 40 Maylor & Co., 90 John, N. Y. 40 Naylor & Co., 90 John, N. Y. 40 Pennsyvania Steel Co., 26 S., 4th, Phila. 45 Philadelphia Steel Eo., 26 S., 4th, Phila. 45 Sanderron Geo. & Co., 20 Gold, N. Y. 40 Sanderron Geo. & Co., 20 Gold, N. Y. 40 Singer, Nimick & Co., Pittsburgh, Pa. 50 Singer, Nimick & Co., Pittsburgh, Pa. 50 Spencer J. R. & Son, Sheffield, England 68 Standard Steel Works, Philadelphis, Pa. 50 The Steel Co. of Scotland, 72 Fine, N. Y. 40 Wardlow S. & C., Sheffield, England 68 Standard Steel Works, Philadelphis, Pa. 57 The Steel Co. of Scotland, 72 Fine, N. Y. 40 Wardlow S. & C., Sheffield, England 68 Steel Spiral Sprinas, Manufacturers of, Cary & Moen, 234 W. 20th, N. Y. 3 Chatillon John & Sons, 91 and 93 Cliff, N. Y. 3 Stocks and Diess.
Pots and Kettles. Ten and Coffee. Ideal Coffee Pot Co., Philadelphia, Pa	Gautier Steel Co., Ld., Johnstown, Pa
turvis to C., I intoucipina	Miller, Metcalf & Parkin, Pittsburgh
Bradley & Co., Syracuse, N. Y	Philadelphia Steel Forge, Philadelphia, Pa 6
resses. Fruit and Vegetable. Mohawk & Hudson Mfg. Co., Waterford, N. Y 37	Sanderson Geo. & Co., to Gold. N. Y
Beecher & Peck, New Haven, Ct	Singer, Nimick & Co., Pittsburgh, Pa.,
Merriman A. H., West Meriden, Conn. 47 Nisgara Stamping and Tool Co., Buffalo, N. V. 28	Standard Steel Works, Philadelphia, Pa
Power Hammers. Bradlev & Co. Syracuse, N. Y. Dienelt, Eisenhardt & Co., Philada., Pa. 46 Pressees, Fruit and Vegetable. Mohawk & Hudson Mrs. Co., Waterford, N. Y. 37 Pressees, Power, Makers of. Beecher & Peck, New Haven, Ct. Hiss & Williams, Lof Plymouth, Brooklyn. 42 Hiss & Williams, Lof Plymouth, Brooklyn. 47 Nisgara Stamping and Teof. Co., Bando, N. Y. 47 Peerless Punch & Shear Co., 52 bey. N. Y. 47 The Stiles & Parker Press Co., Middletown, Ct. 31	Wardlow S. & C., Shemeld, England
Putleys. Hartford Engineering Co., Hartford, Conn	Chatillon John & Sons, 91 and 93 Cliff, N. Y
Hartford Engineering Co., Hartford, Conn	Stocks and Dies, Holroyd & Co., Waterford, N. Y. Wells Bros., Greenfield, Mass
Douglas W. & B., Middletown, Conn	Wiley & Russell Mfg. Co. Greenfield, Mass30
Hartrord Compressed Air Pump Co., Hartrord Conn. 31 Mercer B. F., Alliance, O. 45 Rumsey & Co., Seneca rails N. V. 7 Rumsey L. M. & Co., St. Louis, Mo. 44 Union Mir. Co., 66 Chambers, N. V. 7 Weindel H., Philadeibhia, Pa. 47	Stornge.
Rumsey & Co., Seneca Falls N. Y	Union Storage Co., Pittsburgh, Pa
Union Mfg. Co., of Chambers, N. Y	Ansonia Brass and Copper Co., 19 and 21 Cliff. N. Y. e Stove Repairs. Metzner W. C., Chicago, Ill
tails. Iron and Steel. Makers of. Allentown Rolling Mill Co., Allentown, Pa.	Stove Trucks. Tucker Alarm Till Mrs. Co. Indianapolis Ind.
Weinder H., Philadeidhia, Pa. 47 Aalis, Iron and Steel, Makers of. Allentown Rolling Mill Co., Allentown, Pa. 5 Bates & Despard, 11, Pearl, N. 7, 4 Cambria Iron Co., Johnstown, Pa. 5 Cleveland Rolling Mill Co. Cleveland. Obio. 40 Combination Steel and Iron Co., 81 John, N. Y. 4 Joilet Steel Co., Chicago, Ill. 4	Strops, Razor,
Cieveland Rolling Mill Co. Cleveland. Ohio40 Combination Steel and Iron Co., 8s John, N. Y4	Torrey J. R. Worcester, Mass
Montour from & Steel Co., Danville, Pa 3	Metzner W. C., Chicago, III. Stove Trucks. Tucker Alarm Till Mrg. Co., Indianapolis, Ind
Field Alfred & Co., 93 Chambers, N. Y	Tacks.
Field Alfred & Co., 93 Chambers, N. Y	American Tack Co., Fairhaven, Mass
Riffes, Scythe, Brooks Levi L., Millbrook, N. Y	Field A. & Sons, Taunton, Mass
	Phillips E. & Sons, South Hanover, Mass
Falls Rivet Co., Cuyahoga Falls, Ohio. 45 Gilmor Wm., of Wm., Baltimore, Md. 48 Grundy Geo. C., 165 Greenwich, N. Y. 31	Carpenter J. M., Pawtucket. R. I
Hoopes & Townsend, Philadelphia, Pa. 45 Old Colony Rivet Co., Kingston, Mass. 9 Townsend W. P. & Co. Pittsburgh, Pa. 45	American Tack Co. Fairhaves. Mass. 8 Cobb & Drew. Plymouth. Mass. 91 Dunbar, Hobart & Whidden, 30 Warren, N. Y. 13 Field A. & Sons, Taunton, Mass. 11 Grundy Geo. C., 166 Greenwich, N. Y. 21 Fhillips E. & Sons, South Hanover, Mass. 13 Shelton & Co. Birmingham, Ct. 11 Taps and Pies. Carpenter J. M., Pawtucket. R. 1. Kanning H. S. & Co. 111 Liberty, N. Y. 45 Wells Bros., Greenfield, Mass. 35 Wiley & Russeil Aff. Co. Greenfield, Mass. 35 Testing Machines. 35 Testing Machines. 35 Testing Machines. 37 Richle Bros., Philadelphia, Pa 37 Richle Bros., Philadelphia. 35 Thermometers. 36 Testing Machines. 35 Thermometers. 35 Thermometers. 35 Thermometers. 35 Thermometers. 36 Testing Machines. 35 Thermometers. 35 Thermometers. 36 Thermometers. 36 Thermometers. 37 Thermomete
lock Brenkers.	Testing Machines.
Farrel Foundry and Machine Co., Ansonia, Conn: Gates & Scoville Iron Works, Chicago, Ill48	Richle Bros., Philadelphia
Rolls (Chilled). Garrison A. & Co., Pittsburgh, Pa	Tower L. C., Rochester, N. Y
Roofing. New T. 39 John, N. Y	Block David, 69 Bayard, N. Y
Stanley Rule and Level Co., 29 Chambers, N. Y 3	Thermometers. Tower L. C., Rochester, N. Y. 16 Tin Ware, Stamped and Japannes Block David, 50 Bayard, N. Y. 37 Ketcham E. & Co., New York. 12 Shepard Sidney & Co., Buffale, N. Y. Vozel William, Brooklyn, E. D., N. Y. 3
sad Irons. Enterprise Mfg. Co., Philadelphia	Tool Chests American Tool Co., 116 Chambers, New York
Paeder, Adamson & Co., 730 Market, Philadelphia Sand Sifter. Richlé Bros., Philadelphia, Pa	Armstrong F., Bridgeport, Ct
Riegie Bros., Philadelphia, Fa	Tool Chests American Tool Co., 116 Chambers, New York. Tools, Steam and Gas Fitters, Armstrong F, Bridgeport, Ct
	Lee E. S. & Co., Rochester, N. Y
Boyaton E. M., so Heekman, N. Y. 48 Disston Henry & Sons, Phila. 42 Gerlach Peter & Co., Cleveland, Ohio. 11	Trowels. Bruce Geo. W., I Platt. New York
Gerlach Peter & Co., Cleveland, Ohio	Disston Henry & Sons, Phila
McNiece W. Philadelphia, Pa	Tube Cleaners, Steel. The Chalmers-Spence Co., foot 9th St., E. R., N. Y. 38 Tube Expanders.
saw Frames, Makers of. Boynton E. M., 80 Beekman, N. Y	Tube Expanders. Dudgeon Richard. 24 Columbia, N. Y
	R. T. Deakin, Philadelphia, Pa
Form Asn & College Place N V	Merchant & Co., 607 Market, Phila
Seales, danufacturers or. Buffalo Scale Co., Buffalo, N. Y	Uphoisterers' Goods. Turner & Seymour Mfg. Co. St Reads, N. Y.
Olsen Unius & Co., Philaderphia	Turner & Seymour Mrs. Co. 81 Reade. N. Y
Rienle dros. oth above Master, Phila	
Revolving Scraper Co Columbus, O	Vises. Poker Hermann & Co., rot Duane, N. Y., 16843. Cheney Anvil & Vise Co., Detroit, Mich
Bruce Geo. W., 1 Platt, N. Y	Howard Iron Works, Buffalo, N. Y
Philadelphia Screw Co., Philadelphia, Pa	Newlin & Yardley, Philadelphia
Screw Cutting Machinery. Wiley & Russeli Mfg. Co., Greenfield, Mass	Pancoast & Maule, Philadelphia, Pa
Serew Drivers, (Improved) Makers of Disaton Henry & Sons Phila	Wheels, Raitroad. Bowler & Co., Cleveland, O
Ross W. K., 97 Chambers, N. Y 6	Whetstones. Pike A. F. Pike Station, N. H.
	White Lond
rike A. F., Pike Station, N. H	Brooklyn White Lead Co. 182 Front, N. Y
Schiers Wm. & Co., Pania, and 7 Liberty St., N. Y., 49 Shenrs (Sheep), Field Alfred & Co., ca Chambers, N. Y., 16 Henry Seymour Cutlery Co., Holyoke, Mass. 16 Hildick A. H., 12 Warren, N. Y., 16 Shears, I ron. Hull J. E., Cincinnati, O., 45	Lewis John T. & Bros., 231 S. Front, Phila., Fa
Henry Seymour Cutlery Co., Holyoke, Mass	Window Balances, 23 S. Front, 7118a, 7 a. 27 Window Balances, 24 S. Front, 71 Window Springs, Mokera of Hammond W. S. Lewisberry, Pa. 32 Security Blind Fast Co. Providence, R. I
Shears, Iron. Hull J. E., Cincinnati, O	Security Blind Fast Co., Providence, R. I
Creed Geo. H. 100 Reade N. V. 42	Cary & Moen, 224 W. 20th, N. Y
Spovels. Spades and Scoops. Griffith Geo. Philada. Pa	Security Blind Fast Co., Providence, R. I
Clark, Bunnett & Co., 162 W. 27th, N. Y	Harrison Wire Co., St. Louis, Mo.
Skates. Holler. Rush Geo., Jr., Concordville, Pa	Prentiss Geo, W. & Co., Holyoke, Mass
Philadelphia Smelting Co., 12th and Noble sts., Philadelphia	Trenton Iron Co., Trenton, N. J
Philadelphia	Wire Goods. Manufacturers of. E. T. Barnum's Wire Works, Detroit, Mich.
Ross W. K., 97 Chambers, N. Y	Wire Nails.
Spelter. Manning & Squier, 113 Liberty, N. Y	Dunbar, Hobart & Whidden, 39 Warren, N. Y 13
Osgood F. & Co., Bergen Fort, N. J	HP. Nail Co., Cleveland, Ohio
Holmes, Booth & Haydens, 40 Chambers, N. V akry	Broderick & Pascom. St. Louis, Mo
Cary & Moon, 244 W. 20th, N. Y	Washburn & Moen Mg. Co., Worcester, Mass. Wire Goods, Manufacturers of. E. T. Barnum's Wire Works, Detroit, Mich. 3 Gilbert & dennett Mg. Co. 27 Pearl, N. Y. 7 7 Wire Nails. American Wire Nail Co., Covincton, Ky. Dunbar, Hobart & Whidden, 39 Warren, N. Y. 13 Pleid A. & Sons, Taunton, Mass. 19 HP, Nail Co., Cleveland, Oblo. 19 HP, Nail Co., Cleveland, Oblo. 19 HP, Nail Co., Wilkesburg, Participation of the Masser of th
Carr & Mosn, 24 W. 20th. N. Y	Wrenches, Manufacturers of.
Michael A. M., Albany, N. V.	Wennches, Manufacturers of. Bemis & Call Hidw. & Fool Co., Springfield, Mass 12&12 Coss A. G. & Co., Worcester Mass
taple Drivers. Phila Novelty Mfz. Co. See Cherry Philadelphia	Girard Wrench Mig. Co., Girard, Pa
team Hammers. &c., Makers of. Dienelt, Eisenhardt & Co., Philadelphia, Pa	Wringers. Alexander T. J., Boston, Moss. Alexander T. J., Boston, Moss. Metropolita i Mig. Co., 32 Cortlandt, N. Y. 45 Peerless Wringer Co., Cincinnati, O
Dudgeon Richard, 24 Columbia, N. Y	Peerless Wringer Co., Cincinnati, O
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he American Ilvna	mo-Electric Machine.
The American Dyna For Electro-Plating,	mo-Electric Machine, Electrotyping, &c.
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•	Brooklyn, N. Y. Crane Bros. Mfg. Co., Chicago, III
	McGowan John H. & Co., Cincinnati, O
	Thompson, Epping & Carpenter, Pittsburgh, Pa 47
,	The Norwalk fron Works Co So. Norwalk, Ct. 48 Steam Traps. Providence Steam Trap Co., Providence, B. I34
2	Steel Importers.
,	Hobson Francis & Son, 97 John, N. Y
-	Pierson & Co., 24 Broadway, N. Y
,	Frovidence Steam Trap Co., Providence, B. I. 54 Sicel impor:ers. Carr J. & Riley 30 Gold, N. Y. 40 Hobson Francis & Son, 07 John, N. Y. 40 McCov & Co., 134 and 130 Duane, N. Y. 15 Plerson & Co., 23 Froadway, N. Y. 4 Wolf, Kahn & Co., 46 Cliff, N. Y. 49 Sicel (Nusher's Special: Jones B. M. & Co., 11 and 13 Oliver, Boston, Mass, 48 Steel Manufacturers.
7	Albany & Rensselaer from & Steel Co., Troy, N. Y. 40
3	Chrome Steel Works, Brooklyn, N. Y
3	Gautier Steel Co., Ld., Johnstown, Pa
3	Miller, Metcalf & Parkin, Pittsburgh
,	Pennsylvania Steel Co., 208 S. 4th, Phila
	Rowland Wm. & Harvey, Frankford, Phile 48 Sanderson Geo. & Co., to Gold. N. Y
	Smith, Sutton & Co., Pittsburgh, Pa
	Standard Steel Works, Philadelphia, Pa
	Wardlow S. & C., Sheffield, England
	Jones B. M. & Co., 11 and 13 Oliver, Boston, Mass, 48 Steel Manufacturers. Albany & Rensselaer De & Steel Co., Troy, N. Y. 40 Atha, Benjamin & C. Procklyn, N. Y. 40 Atha, Benjamin & C. Brooklyn, N. Y. 40 Cleveland Rolling Mill Co. Cleveland, O. 40 Gautier Steel Co., Ld., Johnstown, Pa. 58,40 Miller, Metcalf & Parkin, Pittsburgh 40 Naylor & Co., 60,50n, N. Y. 40 Pennsylvania Steel Co., 26 S. 4th, Phila. 6 Rowland Wm. & Harvey, Frankford, Phila. 6 Rowland Wm. & Harvey, Frankford, Phila. 45 Sanderpon Geo. & Co., 50 Gold, N. Y. 40 Smitt, Sutton & Co., Pittsburgh, Pa. 49 Singer, Kimick & Co., Pittsburgh, Pa. 5 Spencer J. R. & Son, Sheffield, England. 16 Staniard Steel Works, Philaselphis, Pa. 5 Wardlow S. & C., Sheffield, England. 16 Steel Spiral Springs, Manufacturers of, Cary & Moen, 23 W. 25th, N. 3 Chatllion John & Sons, 91 and 93 Cliff, N. Y. 9 Stocks and Dies. 9
	Stocks and Dies. Holroyd & Co., Waterford, N. Y. Wells Bros., Greenfield, Mass
	Wells Bros., Greenfield, Mass
	Taunton Crucible Co., Taunton, Mass
	Storage. Union Storage Co., Pittsburgh, Pa
1	
	Stove Repairs. Metzner W. C., Chicago, Ill. Stove Trucks. Tucker Alarm Till Mfg. Co., Indianapolis, Ind18 Htrops. Rozor. Copeland, Hall & Co., Rochester, N. Y15
	Tucker Alarm Till Mfg. Co., Indianapolis, Ind16 Btrops, Razor.
	Stump Puller. Dorsey R. S., Indianapolis, Ind
	Dorsey R. S., Indianapolis, Ind
	Tacks. American Tack Co., Fairhaven, Mass
	Dunbar, Hobart & Whidden, 39 Warren, N. Y 13 Field A. & Sons, Taunton, Mass 13
	Grundy Geo. C., 165 Greenwich, N. Y
	Shelton & Co., Birmingham, Ct
	Carpenter J. M., Pawtucket. R. I
	Wiley & Russell affg. Co., Greenfield, Mass
	Phillips E. & Sons, South Hanover, Mass. 13 Shelton & Co. Birmingham, Ct. 11 Taps and Dies. Carpenter J. M., Pawtucket R. L. 48 Manning H. S. & Co. 11 Liberty, N. Y. 46 Wells Bros., Greenfield, Mass. 35 Wells Bros. 14fg. Co., Greenfield, Mass. 37 Testing Machines. 37 Elohie Bros., Philadelphis. Pa 37 Elohie Bros., Philadelphis. 29 Thermometers. 29
	Thermometers. Tower L. C. Rochester, N. Y
	Tin Ware, Stamped and Japanned Block David, 69 Bayard, N. Y
	Ketcham E. & Co., New York
	Tool Chests
	Eichie Bros., Philadelphia. 79237 Thermometers. Tower L. C., Rochester, N. Y. 16 Tin Ware, Stamwed and Japannee Hlock David, 69 Bayard, N. Y. Ketcham E. & Co., New York. 12 Shepard Sidney & Co., Buffalo, N. Y. Vogel William, Brooklyn, E. D., N. Y. 9 Tool Chests American Tool Co., 116 Chambers, New York. Tools, Steam and tias Filters. Armstrong F., Bridgeport, Ct. 46 Saunders' Sons, Yonkers, N. Y. Tree Pruners. The Iron Line, 33 Coenties Silp, N. Y. 45 Tree Pruners. Let E. S. & Co., Rochester, N. Y. 99 Rence Gee, W., Platt, New York. 19
	Saunders' Sons, Yonkers, N. Y Tran-portation Lines.
	Tree Pruners.
	Bruce Geo. W., 1 Platt, New York
	Dission Henry & Sons, Phila
	The Chalmers-Spence Co., foot oth St., E. R., N. Y. as
	Tube Expanders.
	Tube Expanders. Dudgeon Richard. 24 Columbia. N. Y
	Lee E. S. & Co., Rochesier, N. Y. Troweis. Bruce Geo. W. : Platt. New York. Bruce Geo. W. : Platt. New York. Fry Squares. Heveis, &c Makers of. Disston Henry & Sons. Phila. Tube Cleaners, Steel. The Chaimers-Spence Co. foot cht St., E. R., N. Y. 38 Tube Expanders. Dudgeon Richard. 24 Columbia. N. Y. Tubes. Telescope. R. Deakin, Philadelphia, Pa. Tubing.
	Twist Drills, Makers of.
	Twist Drills, Makers of.
	Twist Drills, Makers of.
	Merchant & Co. 607 Market, Phila
	Merchant & Co. 607 Market, Phila
	Merchant & Co. 607 Market, Phila
	Merchant & Co., Co. Market, Falla. Twist Drills, Makers of. Morse Twist Drill & Mach. Co., N. Bedford, Mass., 46 Uphoisterers' Goods. Turner & Seymour Mfz. Co. & Reade, N. Y. Valves, Gas., Water and Steams. Luciow valve Mfz. Co., Troy, N. Y. Mohawk & Hudson Mfz. Co., Waterford, D. Y. 37 Vises. Boker Hermann & Co., 101 Duanc, N. Y. Boker, Go. 32 bey, N. Y. Hall Mfg. Co. 32 bey, N. Y. Hall Mfg. Co. 32 bey, N. Y. Hall Mfg. Co. 32 bey, N. Y. Houward Iron Works, Burlalo, N. Y. Newlin & Yardley, Philadelphia. 75 Stephens Patent Vise Co., 41 bey, N. Y. 46 Millers Fallis Co., 74 Chambers, N. Y. 77 Newlin & Yardley, Philadelphia. 78 Stephens Patent Vise Co., 41 bey, N. Y. 46
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	Merchant & Co., Co. Market, Falla. Morse Twist Drill & Mach. Co., N. Bedford, Mass., 46 Uphoisterers' Goods. Turner & Seymour Mrk. Co. & Reade, N. Y. Valves, Germour Mrk. Co. & Reade, N. Y. Luciow Valve Mrg. Co., Troy, N. L. Luciow Valve Mrg. Co., Toy, N. Y. Merkey & Hudson Mrg. Co., Waterford, D. Y. 19 Wester & Hudson Mrg. Co., Valverior, N. Y. 29 Howard from Works, Buffalo, N. Y. 46 Millers Falis Co., 24 Chambers, N. Y. Newlin & Yardley, Philadelphia. 29 Stephens Patent Vise Co., 41 Dey, N. Y. 46 Vises, Pipe Fitters'. Pancoast & Maule, Philadelphia, Pa. 30 Wheels, Mailrond. Bowler & Co., Cleveland, O. 6 Whitney & & Sons, Philadelphia. 6
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ectric Machine, cotyping, &c.

Requires no Water.

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Latest Improvements. Cannot Reverse Current.

ZUCKER & LEVETT, Genl. Agents, Manufacturers and Importers of NICKEL PLATERS' SUPPLIES. 540, 542 & 544 WEST 16TH STREET, N. Y.

DIE and TAP used in One Each STOCK, COLLET,

LITTLE GIANT

Screw Plates.

MARABARARARE MADE BY

S nd for pric. s.

WELLS BROTHERS & CO., Greenfield, Mass.

METALS.

NEW YORK WHOLESALE PRICES, March 2, 1881.

METALS.	
IRON.—DUTY: Bars, I to 1560. W m; Sheet, I Mood and Scroll. 15 to 1560. W m; provided, that I of the above from shall pay a less rate of duty the per cent. Pig. \$7 % ton; Polished Sheet, 50. Wrought Scrap, 80 @ ton: Cast Scrap, 80 per Railroad. 700. % 100 ms. Boller and Plate, 1560. W	Bar aoi an
Wrought Scrap, \$6 \(\psi \) ton: Cast Scrap, \$6 \(\psi \) per Haliroad. 70c. \$\psi \) ton 8a. Boiler and Plate, 1\(\psi \). \$\psi \) ten 82c.00 \(\psi \). \$\psi \) ton 82c.00 \(\psi \). \$\psi \) ton 20.00 \(\psi \). \$\psi \] ton 20.00 \(\psi \).	to m.
	22.
Eglistom. # ton 22.00 @ Carabroe # ton 22.00 @ Colspess # ton 24.00 @ Giengarnock # ton 23.00 @ Gartsherrie # ton 23.00 @ Gartsherrie # ton 23.00 @	23. 24. 23. 23.
Rails. # ton \$48.00 @ Steel (at mill). # ton 0.00 @ Old Rails. # ton 27.50 @	50.0 02.0 29.0
Wrought Scrap # ton	31.0
to in, round and square	2.3
10 In.X4 to 1 In.	614
Common R. G American American 21 to 24.	an.
Galvanized to to to	ial
31 to 21 Wh 89e0 7 25 to 26 Wh 99e0 8 27 Wh 99e0 8 27 Wh 99e0 8 27 27 27 27 27 27 27	360
Russia. II @12 American Cold Rolled	op- of ad
American Ingot	
Braziers' Copper, ordinary sizes, under 16 oz. and over 12 oz. # 80. ft # h Braziers Copper 10 oz and 12 cz., # 30. ft # h Lighter than 10 oz. # sq. ft # h	300 340
SHEATHING, BRAZHESS COFFER. BOLTS, &C. Brasiers' Copper, ordinary sizes. toss. per sq. ft., and over per lb. Frasiers' Copper, ordinary sizes. under 16 os. and over 12 os. \$\psi\$ so. ft. Braziers Copper 10 os and 12 es. \$\psi\$ so. ft. Lighter than 10 os. \$\psi\$ sq. ft. Circles less than \$\psi\$ is. n diameter Circles \$\psi\$ tis. n diamet	310 310 310 360 360 360
Bolt Copper . * * * * Copper Bottoms.	
24.48	150
O'REILL BYATERT FLANBERG COPPERNE_S 12 on and lighter	70
24 and 15 os. and heavier	30
Brown & Sharp's Gauge the Standard for Wire. English Gauge the Standard for Wire. BRASS MANUFACTURERS' PRICE LIST.—dis 20%. June 10, 1800. Cash prices for Roll and Sheet Brass. For less qua	Nat
all Nos. not thinner than to No. 28, wider than 2 in.	oe oe
2. In., inclusive	4C
clusive. All Brass thinner than No. 8 is Platers' Brass, at Sheets 24348, and all sneets cut to particular sizes	10
o in and over	100 100 100 100 100 100 100 100 100 100
10 40 10 40. 41	e
4c ¥ 5 more than High Brass, Oilding Metal, 5c ¥ 5 more than High Brass. In Bars. 48 Sawed 5swed 91 Platers' or Gold Metal Planed or Polished. 44	000
FOR SLITTING. Metal in width in to 1/2 in to No. 28, inclusive, 10. 4 in advance. Metal, in width 2 in to 1 in. thinner than No. 28, 20. 4	P
b advance. Metal, in width 1 in. to 1/4 hinner than No. y advance. Metal, in width 1/4 in. to 1/4, inclusive, not thinner than No. 26, 2c. W b advance.	
Metal, in width 1/2 in. to 1/4 thinner than No. 28, 5c. § advance. Metal, 4 in. in width and less, 10c. § B advance. Any of the above widths cut to particular lengths, add	
OERMAN SILVER MARKET METAL AND WIRE. Market Metal. 4 per cent., 13 inch, to No. 26	
10 6 6 6 6 6 6 6 74 Log	
more than to Sa. \$ 2.00 g S. Advance 2c, for each additional inch in width above 12 in., and 2c, W B on each No. thinner than Nos. 26 to 36, inclusive All German Sliver thinner than No. 36 is Platers, at	
500 @ B additional. Germad Silver Scrap one-half less than net price of the muket Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.	
BRASS AND COPPER WIRE. Gild'g and High Brass. LOW Brass. Copper. No. to 20	11
NO.25	1
NO.27 48 42 48 80 60 60 60 60 60 60 60 60 60 60 60 60 60	
NO.32	BOF
Spring Wire 2c # D advance. Elat, Square and Hall Round Wire 60 # D advance on Round Wire. Fancy Wire not less than 100 # D advance of Round Wire Brass Rods, No. 8 and larger, not less than 2 feet	14.80
ringths, 36c. Wire straightened and cut, smaller than No. 8, and on less than 2 feet lengths, 43c. Wire and Rods less than 2 feet lengths, special rates Twelve cents per B extra for spooling on 1 2 spools.	U
Twelve cents per B extra for spooling on 1 m spools. MINGELLANEOUS. Brass Pall Ears	4
figh Brass Scrap	9
Terms—Net cash. Interest to be added after thirty ays. TUBING.—dis 20 % % % % % lain No. 2 inclusive above 4 in. to 3 in	X
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Ancy Tubing to No 20. 40c anglish, Scotch and Extra Patterns Fancy Tubing to No. 20. 45c uting Sawed or Cut 2 to 4 feet long, 2 cents adulting Sawed or Cut 2 to 4 feet long, 2 cents adulting Sawed or Cut 2 to 4 feet long, 2 cents adulting Sawed or Cut 2 to 4 feet long, 2 cents adulting Sawed or Cut 2 to 4 feet long, 2 cents adulting Sawed or Cut 2 to 4 feet long, 2 cents adulting Sawed or Cut 2 to 4 feet long, 2 cents adulting Sawed or Cut 2 to 4 feet long, 2 cents adulting Sawed or Cut 2 to 4 feet long, 2 cents adulting Sawed or Cut 2 to 4 feet long, 2 cents adulting Sawed or Cut 2 to 4 feet long, 2 cents adulting Sawed or Cut 2 to 4 feet long, 2 cents adulting Sawed or Cut 2 to 4 feet long, 2 cents adulting Sawed or Cut 2 to 4 feet long, 2 cents adulting Sawed or Cut 3 to 4 feet long, 2 cents adulting Sawed or Cut 3 to 4 feet long, 2 cents adulting Sawed or Cut 3 to 4 feet long, 3 cents adulting Sawed or Cut 3 to 4 feet long,	Bi
If Mandrel Drawn Tubes, 5 cents advance on List Prices, ancy Tibing to No 20. specific, Scotch and Extra Patterns Fancy Tubing to No. 20. ubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List do to 2 cents a cent for each additional cutting under 2 feet. If Mandrel Drawn Tubes under 16 in. 25 cents per pound advance. ZING TUBING—dis 20 %.	Di Ei
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	GERMAN SILVER TUBING.—dis 10 %	a.
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		50
50	STEEL.—Dury: Bars, Ingots, Sheets and Coit valued at 7 cents # \$\mathbb{m}\$, or under, 24\(\frac{1}{2}\) cents, over, cents, and not above it, 3 cents \(\pi\) above it, 3\(\frac{1}{2}\) cents \(\pi\). Railway Bars, in part Steel, i cent \(\pi\) \$\mathbb{m}\$. Provide that Motal cemented, cast or made from Iron by the	8 7 8 . 1. O F
75 50 52	description, shall be classed as American Cast Steel.	
52	For American Steel see quotations under heading o	
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	Best Cast. \$\pi\$ 15\forall Extra Cast. \$\pi\$ 10\forall Round Machinery, Cast. \$\pi\$ 10\forall Process.	C
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	Best Double Shear # B 15%	0
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	Tin Lined Pipe	1
	Sheet	
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	BARRITT METAL.	1
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0	N. P. U \$\pi\$ 756 @ 80 A. 240; B, 200; C, 150.	
8	TIN.—Dury: Piates, Sheets, Tagger and Terne, 1.10 \$\frac{n}{2}\$ is Electrogalvanised Plates, 20 \$\frac{n}{2}\$ is Manufactures of, not enumerated, 43 per cent, ad. val. Bars, Block and Pigs free. Banca, subject to duty of 10 per cent,	1
9	B; Elecro-galvanised Plates, 20 # B; Manufactures	1
9	of, not enumerated, 35 per cent. ad. val. Bars, Block	
9	Ranca Banca, subject to duty of 10 per cent,	
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П	TIN PLATES.	1
1	I C 10X14 Prime Charcoal	1
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1	SPELTER-DUTY: In Pigs, Pars and Plates, \$1.50 F	1
1	roo flux	
1	American, cash	
1	Bergen Port from Lenign Ore	
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1	ZINC.—DUTY: Pig or Block, 1.40 F 100 Ds. Saset 340 W B. Sheet, Cask	1
	" Open7% @ 8c	I
1	Paper Stock, &c.	
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	(Dealers' Selling Price.)
	White Shirt Cuttings, No. 1 554 @
	11 No. 2 5 @
	Mill Assorted Whites 514 @
	Unbleached Muslins
	City Whites, No. 1
	New Seconds, light
	dark
	No. 2. Whites 3 @
	Cotton Canvas 4% @
	Linen Canvas, No. 1 45 @
	seconds, City No. 1
	" No. 2 114 @
	Colors. per 100 lbs 85 @
١	Ianlia Rope 314 @
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	unny Bagging, No. 1
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ĺ	edger and Writing 146 @
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0	Black Lamp. Coach Painters. \$\bar{\pi}\$ 200 Ordinary 600 Foury Drop, fair. 12\(\overline{\pi}\) 12\(\overline{\pi}\) 12\(\overline{\pi}\) 12\(\overline{\pi}\) 12\(\overline{\pi}\) 12\(\overline{\pi}\) 12\(\overline{\pi}\) 12\(\overline{\pi}\) 13\(\overline{\pi}\) 13\(\o
3	" Ivory Drop, fair. 12 @ 150
t	West Dest to all best
	Blue Prussian, fair to best
	Bine Chinese dry
1	Ultramarine
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	in oil
	Green, Chrome
	Iron Paint, Bright Red B b 2540
	" Purple P D 30
1	Ground in Oil, Bright Red # B she
1	" " Brown W D 4140
1	Mineral PaintsPurple
1	Orange Mineral
1	Brown # b 14c # b 25c # b 14c # b 25c # b 14c # b 25c # b 25
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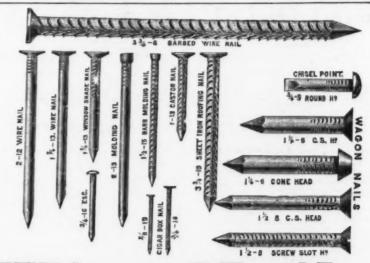
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5. 55.1	Sabin's LeverNo. 1, \$1; 2, \$1.50; 3, \$2; 4, \$2.50; dis 30 Sabin's BossNo. 1, \$4.40; 2, \$4.20; 3, \$3.00, dis 40 Sabin's Convey	XXXX
18.80	Philadelphia 5 in., \$5.00; 8 in., \$7.00, dis 35 Barker's Coucealed	××
200	Rubber, complete	75 %
2 22 20	Drawing Mnives. Arlington Edge Tool Co	*
5	Crossman s No. 1	N 20 %
2 2	Drawing Anives	5 5
4 4	Witherby Tool Co	XX
ŝ	Blacksmitns' each #2 70 ne	28
t g	B'acksmiths Seif Feed'ng each 87.40, die 20 B'east P.S & Wdis 20&10	40
8	Preast, Wilson's	8
8 8	" Bartholomew'seach, \$2.50 dis 24&to Ratchet, Merrill's	20.00
*	Hotchkiss dis 2c Frenst, Wilson's dis 2c Frenst, Wilson's dis 2c Miller's Fails each \$2.0c dis 2c Bartholomaw's each, \$2.0c dis 2c Ratchet, Merrill's dis 1c Inpersoll's dis 2c Whitney's dis 3c Weston's dis 3c	2 20 20
	" Moore's Triple Actiondis so @ 25 Whitney's Hand Drill	× ×
8 8	" Whitney's dis 20 " Weston's dis 20 " Weston's dis 20 " Moore's Triple Action dis 20 Whitney's Hand Drill dis 50 Wilson's Drill Stocks dis 20 Automatte Boring Tools each \$2.2, dis 20 Drill Chucks.—Borse' Beach Patens. dis 30 Drill Chucks.—Borse' Adjusteach \$1.00, dispo	× ×
8	Danoury	96 I
5	Egg Beaters. # dor. \$2.50 ne	1
5	Acme	20 00
9.1	Family	eΙ
	Elevator Buckets. Mill E. Buckets, light, 314 to 10 in. (Duc's Improved W 100 \$15.00 @ \$44.00, dis. 10	0 6
	₩ 100 \$15.00 @ \$54.00 dis. to: Will E. Buckets, heavy, 5 to to inches (Duc's improved ## dor #4.00 #10.00 dis. to: ## dor #4.00 #10.00 dis. to: ## dor #4.00 #10.00 dis. to:	
	Emery and Emery Paper.	1
8	"Flour and FF. P B "in 10-lb. caus. Sc extri Washington Mills-Heguar Nos. P B "Flour. P B	
	"Flour	3
	" Flour and FF " P D 40	100
	Wellington Mills, Grain * b for net	
	Excessor Hills, Regular Nos., Grain in Ergs V B & 4 Flour and FF V B 4 Wellington Mills, Grain V B 50 co net Hampdan Emery Grain So net Flour So net Flour So net B. & A. Emery Paper dis 20245 Knameled and Tinned Ware.	
	Enameteis and Thence Ware. Settles	
	Finned Sauce Pansdis 30 f	
11	Escutcheon Pins. Iron	1
1	Escutcheons. Door LockSame discounts as Duor Lockies	
	Prass Thread	
1	Paucets dis 40 % Fenn's dis 40 % Fenn's dis 316 % di	
1	rary's Patent Petroleum	
a	Vew's Patent Key	1
1	Interprise (Self Measuring)	
	E ALUM	2 4
E	lack Diamond, new list	
NA NA	ilcholson(Nicholson List) dis nadden & Cockayne File Codis	
E	liscox File Mfg. Co., new list	1
2 40	onnson & Brodis 30 % autoher's	
F	ubure. \$	i
V	L Disston & Sons (new list)	
K	Fluting Machines.	1
P	Fluting Machines. nox, 4-inch Rolls	1
1	5 4.75 each uet	1
E		1
000	" No. 2 4-inch Roll	0
CA	agie, 34-inch Roll. \$2.15, dis 20 5 """ \$2.85, dis 20 5 Ureka. No. 1, 7-inch Roll	1
		1
8	rown ranu ruter, Nos. 1, \$1,500; 2, \$11,00; 3, \$10,00 \$\text{dos.}\$ \ \text{dos.}\$ \ \text{dos.}	
C	iark's Hand Fluter	1
B	uffalo	E
H	Forks. ay. Manure and Sptding	
1	Fruit and Jelly Presses.	1 #
I C	nterprise Mfg. Codia 25 % mericandia 20 %	
B	#rv Pana. urnished, list as foliows	2000
*	dos85.00 85.75 4.25 4.75 5.25 6.00 7.00 8.00 0.00 Acme"	V
(Tauges.	L
W	" Chapin's dis 50810 \$ "Tre dis 10810 \$ "Disston's dis 20810 \$ Clauleta dis 20810 \$	E
N	Olmiete	1
64	ail and Spike	A
De	Diamond Gimlets	31
	" Douglass' dis 50 5	H
Ti Fe	Glue Pata,	CB
80	Crindstone Fixtures. dis 70&100 %	H
Re	rgent's Fasene	-
U.	M. C. B. E. 11 up	-

9	Covert's Pat. Ropedis Horse and Cattle Ties, Covert'sdis	50 % 50 %
ei	Rammers, dis r	< %
et	Humason & Bookley	
34 10	Magnetic Tack, Nos. 1, 2, 3, \$1.25, 1.50 and 1.75 dis 25&1	0 %
et	Yerkes & Plumbdis ,	5%
2	Hand Cuffs and Leg Irons. Providence Tool Co.'s Hand Cuffs, \$15.00 \(\psi \) dos \(\psi \) Leg Irons, \$25 \(\psi \) dos \(\psi \)	n %
100	TOWER'S CM3	5 %
K	Handles.—Door or Thumb Latches— Nos 0	
at at	Roggin's Latches per dos scottos p	100
70	Bronzed Iron Dron Latches \(\) \(\text{R} \) \(\text{OS} \) \(\text{So}_0.75 \) \(\text{Q} \) \(\text{Os} \) \(\t	0%
S	Barn Doorper doz \$1.40, dis 10 Wrought Chestdis 65&10	2 %
2	Surface Chest	200
,,	Saw and Plane dis social Boynton's Pat. Loop Saw Handles dis so	1
	## Centennial Saw Handles dls 24 Hammer and Hatchet	1 %
% %	Hickory Firmer Chisel, assorted, # gross \$4.40	- ,-
N. W.Y	Socket " " assorted. " a.o. dis	
× × ×	Socket "assorted, 5.00 dis Framing assorted, 5.00 ockre File, assorted, # gross	9
% %	Patent Auger, Ives'	
K	Patent Auger, Ives'	
1	Figure 5-8. Barn Door, old patterns dis centre in New England dis 6-62:0 Noveity dis 49. Challenge. dis 50. Climax (Anti-Friction). dis 50. Sterling Improved (Anti-Friction). dis 50.	8
2 2 2	Noveity	18.80
ŝ		
0	Kidder's	* *
	Harness Snaps. Henshaw'sList of 114 changed to 14 00, dis 55 @ 50	
	Judd's " " 14.00. dis 15 @ 60 Fitch's (Bristol) - " " 24.00. dis 55 @ 60	*
	Motchkiss'dis to	5
	Andrews	4 34 36
	Covered Spring dis 402 to	ž.
	isaiah Blood	
	Hatting. Nos. 1 3 3 # 408 7.40 8.00 8.40	2
	Bhingling, Nos. 1 2 3	
	Shingting Nos: 2.2 20 dog 85 on 85 on 80 on	8
1	Claw, Nos. 1 2 3 P dos 9.00 9.50 10.00 Lathing, Nos. 1 2 3 P dos 8.00 , to 9.00 Verkes & Plumb	
	Claw, Nos. 1 2 3. P dos 9.00 9.50 10.00 Lathing, Nos. 1 2 3. P dos 8.00 .50 0.00 Yerkes & Plumb	
	Lathing Nos. # doz 7.50 8.00 8.50 8.00 8.50 8.50 8.50 8.50 8	1
	Claw, Nos. 123 V dos 9.00 9.50 10.00	
	11 Non c 6 2 8 W don then 18 co 20 co 22 co	1
1	Collins dis 10 Shingling, Nos. 1 2 3 \$\parallel dos \$4.00 \$4.00 \$5.00 \$7.00 \$	
-	"Lightning" # doz \$20,00 ne	
i	Wadsworth:dis 1314:	
1	Gato, Western	5
1	N. E. Reversible	6
	N. E. Reversible	
l	Seymour's	5
	Rolled Plate	
-	Plate Hinges (8. 10 & 12 In. \$5.55 W 100 D (dis 10 f Providence" (over 12 in. \$4.25 W 100 D (dis 10 f Serew Hook and) 8. 10. 12 In. \$5.75 W 100 D	6
l	Btrap	
1	Seruw Hook and Eye	
1	Serew Hook and Eye	
1	#ioes.—Riveted Shankper dos, 85.00; dis 35,5 Socket	
1	Grubdis 15 5 Planters'dis 25 8	
l	Beovill Pattern, Handled	
1	Winsted & Lane, Planters	
	Hooks.	Τ.
1	Bird Cage, Sargent's list	
	Cotton Reading Ciss 40x10 5 Cotton, Patented (N. Y. Mallet & Handle Wks), dis 40x Cotton (Humason & Becklev Mfr. Co.). dis 40x Belt. dis 60x10 5 Benca.—Hotchkins' 8x00 ¥ d0x. dis 10x dis 10x dis 10x	
		1
	" Skinner's, \$6.24 per doz	1
-	" Weston's, No. 1, \$10.00; No. 2, \$9.00 F dos dla 2x \$ "McGll's, \$2.00 F dos	1
1	Coat and Hat, Sargent's list	1
n	Passal (D & C Men Co.)	1
1	Wrought Staples and Hooks and Staples. dis 75&10 S Staples, Stanley's list. dis 64&10 A Wire Screw Hooks and Eyes. dis 6-&10 S	I
The last	Whimetree—Patent	1
	Howas Notis	1
4	usable # 10 300 270 240 240 230 220 dis	
,	or Blued " 310 280 260 250 240 290	M
	C	B
E	Finished 26 23 21 20 19 18c dis	BEE
	Herse Shoes.—Burden	n
2	Medium and Heavy keg 4.37%	8
160	American ice Chisel	8
2000	Noveity Ice Breakers	J
Se Per	Medium and Benvy	D
	" Pick in Handle # dos 2.00 net	SF V
H	Temphination Ion Tools	E
P.C.	Brass, 7 to 13 inches inclusive \$ 3 320 net	D
E		E
	" Shoe " # doz 81.55 dis 15 5	E
HE	Bread Bread Knives dos 81.40. dis 15 4 toran's Shoe and Bread Knives dis 25 5 tay and Straw Wadswortn's" dis 234 5 able and r'ocket. See Cutlery	Ji Bi Ji
0	M.nobs-	H
BHD	ase—Commondis 3c@tiof lemacite Door KnobsNaw list, dis 2c@to 5 oor, Mineral	
	temacite Door Moos	81
P	urniture, Piain	Bi
20	at the second of	

8 50 8 50	S I_I Melting—Sargent's. dis toête S Reading
8 15 8 25	
8 50 8 50 118 5	With Guards 340 extra. \ het \ Hurricane No. 3
\$ 10 8 20	Frady's Patent dis 10 % of the first of the
s 15 b ne	Yankee
3 10	Convex Reflector
8 25	X Yankee
tto c ne	Wood # doz \$1.00—dis 30 \$ Eureks Tinned # doz \$1.00—dis 10 \$
8 10 ;	Sammis
010	I Aines.—Linen Fish
\$10 :	87.50
1 25 5 1 25 5	Locks and Latches. Cabinet—Eagle
20 9 E10 9	Bridgeport. dis 2522 \$ " A. E. Detta
	" Bi lageport dis 25% 25 4 18 26% 25 4 18 26% 25 4 18 26% 25 4 18 26% 25 4 18 26% 25 18 26% 2
dis kro	Flat Key
	Yale Lock Co., Fiat hey
net net	Plate
tio 9	
40 % 50 %	Russeit & Erwin List of June 10, with changes of Dec. 1, 1882.
10 9	Reading Hardware Co Trenton Lock Co
40 % 6c %	Pention Lock Co. Padiceks—Hussell & Erwin
60 % 60 £	Romer'sdis 40 % Conestoga
60 S	" A. E. Dietz
10 %	Penfield Block Works, Lig., Apple & Bickory.dis 30 \$
75 % 40 %	Dixon's (P. S. & W.) Nos. 1 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
15 75 25	Penfield Block Works, Lig., Apple & Bickorydis so & Meat Quiters. Dixon's (P. S. & W.) Nos. 1 3 4 4 5 5 5 6 6 6 6 6 6 6
25 40 25 %	Woodruff's (P. & & W.)Nr.3, 100 15.00 30.00 —dis 30 %
75 25 00	M dos. \$27.00 33.00 4000.dis 40&ro&2 1 Draw CutNos 5 2 0 8 20
34 % .00	Each
00 00 30 %	Kach \$4.00 7.00 10.00 24.00 50.00 50.00 Kleser's No. 54 \$40 per doz., dis 40 \$
25 50	Silver & Deming
90 00 90	₩ dos
00 00 %	Beef Shavers (Enterprise Mig. Co 30.00 38.00 Minches Minches Misses
10 00 50	smith's per dos, Sirgle, \$1.30; Double, \$1.50; dis 10 % Cowles Hdw. Codis 40% to 5
00	Stephins Pattern
net 16 %	Thingot Ends
10 % 54 %	Uncolis Patterndls tokio £ Weed's
to %	Am
201	National Washers. See Trade Report Square Nuts and Washers.
10 % 10 %	Hexagon Nuts
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0 %	Turner & Seymour Mfg. Co
0 %	Ollers.—Zinc and Tin
lis o %	Malicable (Hammer's)
55	Olmstead's, Tin and Zinc
55	Brass
95	Ox Halls dis accion Penetiles (dis 40 & 10 \$ Paber's Carpenters' High list, dis 40 & 10 \$ Paber's Carpenters' Faber's Carpenters' Forms 4.50 net Lumber Forms 6.50 net Lumber Forms 6.50 net Lumber Gison's Carpenters' dis 40 & 10 \$ Packing, Steam. N.Y. Beitung and Packing Co. dis 20 \$ Pareture Nails.
55	" Lumber # gross 4.50 net Dizon's Carpenters' dis 40 & 20 \$
0 1	Pricking, Steams. N. Y. Beiting and Packing Co
0 % 0 %	Brass Head. Sargent's List
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	" Judd's List
1 %	Pinking from # dos \$50, net Piniting Machines.
0 %	Astor Piaiting Machineeach \$15.00, dis 20 \$ Crown Piaiting Machines
36	Planes and Plane Irons. Benen, First Quality
2 2	Bench, First Quality
20 A	Bailey's "Victor"dis 20210 S Defiance Adjustabledis 20210 S
8	Plane irons, Butcher's
8	The Globe Mrg. Co. Baldwin Iron "
lis	Sandusky Tool Usdis so t Pliere and Nippers.
ia	Button's Patent. dis 234 \$ Hall's Pat, Compound Lever Cutting Nippers No. 2; d n. 220; No. 4, 7 in., 250 \$ doz
% is	Pilers and Nippers. Button's Patent. dis 394 \$ Hall's Pat, Compound Lever Cutting Nippers No. 2; dis 380, No. 4, 7 in. 390 \$ doz. dis 45 \$ Humason & Beckley Mrg. Co. dis 335 \$ Gas Pilers. dis 05 \$ Eureka Pilers and Nippers. dis 26 \$ Eureka Pilers and Nippers. dis 26 \$ Eureka Pilers. and Nippers. dis 26 \$ Eureka Pilers. and Nippers. dis 26 \$ Eureka Pilers. dis 26 \$ Eureka Pilers. dis 35 \$ F. & Tinners' Cutting Nippers. dis 15 \$ Plumbs and Levels.
is	Russell's Faraliel
16 16	Plumbs and Levels. Cab 40 % Stanier R. & L. Ca.'s Pat. Adjustable
16 16 et	P. B. & W. Cast Steel. die 35 "Timers' Cutting Nippers dis 15 Plumbs and Levels. dis 45 Plumbs and Levels. dis 45 Stanier R. & L. Co.'s Fat. Adjustable. dis 5,210 Stanier R. & L. Co.'s Fat. Adjustable. is 5,210 Chapin's Patent Adjustable. dis 5,210 Non-Adjustable. dis 5,210 Standard Rule Co.'s New Adjustable. dis 6,210 Stondard Rule Co.'s New Adjustable. dis 6,210 Focket Levels. dis 6,210 Davis' Non-Adjustable. dis 6,210 Davis' Inclinometers. dis 6,210 Foost the dis 1,210 Foost the and Tree Augers.
MM	Standard Rule Co.'s New Adjustabledis botto \$ Non-Adjustabledis botto \$ Johnson's Patent Adjustable
MMMA	Pocket Levels
et	Samson Post Hole Diggerper dos \$37.40, dis 20 %
ec ec	retener Post Hole— 6 in. \$25,60; 7,8 and 0 in. \$25 per dos
et :	Diaston's Combined Pruning Hook and Saw per dos \$19.00, dis 20 \$
8 8	Pruning Hook
21.	Laireas.
y	Hot House and Tackie discosine \$ 1ap'd Screw dis Costrosine \$ 1rass Screw dis Costrosine \$ 1rass Screw dis Costrosine \$ 1 Clothes Line dis Costrosine \$ 1 Clothes Line dis Costrosine \$ 1 "Anti-Friction" \$7.50 dis 6051 \$ 1 "Anti-Friction" \$7.50 dis 6051 \$ 1 "Tarbox Fat. Iron discos \$ 1 "Tarbox Fat. Iron dis
15 I	Hay Fork Solid Eye, \$4.50; Swivel. \$5.00, dia 52\$20 \$ "Anti-Friction."
	" Tarbox Pat. Irondis so finade Rackdis so finade Rack
9 1	Pauches & W doz \$2.00: 2.85; 2.40, dis 40 \$ elt or Drive
W	ipring
	10110, Tinbery # 606 \$1.44, 606 40 5

March 3, 1881.	
Rail. Rail. Sliding Door Wrought Brass # D 490 dis 20 9	Old Colony
" rron, Painted . \$\psi\$ foot 40.013 10& ro Bara Door	Old Colony
" for N. E. Hangers— Small, Per 100 feet	Iron and Brass Head, R. & E. list
J. R. Torrey Razor Codis 15 %	Loss than a case
Razer Straps. dis 45@45 Genuine Emerson dis 45@45 Badger's Emerson dis 40	Spoke Manwa, Defiance Metallicdis soore Iron
Badger's (not Emerson). dis 40 × 1 mitation Emerson. % dos \$2.00, dis 20 % dis 40 %	Iron dis 49 Wood dis 90êts Hallev's (Stanlev R & L. Co.) new liss dis 90êts Stearns' dis 20êts Stearns' dis 20êts
Genuine Emerson dis 44% 5 Badger's Emerson dis 30 Hadger's (not Emerson) dis 30 Evans' dis 40 Initiation Emerson \$\psi\$ doz \$82.00, dis 20 \$\psi\$ Hunt's dis 40 Chapman dis 40 Chapman dis 16 Chapman dis 20 \$\psi\$ Torrev's dis 20 \$\psi\$ Correv's dis 20 \$\psi\$	Spoke Finances # dos \$10.00 dis 40& \$10.00 di
Iron and Tinned. dis 65 8 In bulk, list of May 2: dis 45 Copper Rivets and Burs dis 33 4 14 F B 600 500 540 540 650 680 600 640 700 Burr 8 dis 45 % dis 45	Bipoons. Basting. Riveted Table and Bea. Riveted Table and Bea. dis 50 Solid Table and Bea. dis 50 Solid Table and Bea. dis 50 Solid Table and Bea. Britannis. dis 50 Solid Table and Bea.
River Sets	Hell & Elton. dis 402 car.
Stair, Black Walnutdis 20 %	German Silver
Rollers. Sarn Door, Sargent's list	Tables. \$2.00 \$ gross, in Tables. \$2.00 \$ gross, in Cowles Edw. Co.)
Rollers Patent	"Lightning "Screw Platedls 10
# Tar'd Hope # 15 46 0 15 44 0 15 44 0 15 44 0 15 44 0 15 44 0 15 44 0 15 45 0 15 0 1	## ## ## ## ## ## ## ## ## ## ## ## ##
"Hay Rope	No s. W B 15c no No s. W B 15c no No s. W B 15c no Arkansas Stone No s, 4 to 6 in
" Hay Rope. Boxwood. Ivory.	Turkey Oil Stone (Chase)
Standard dis 702 to \$ dis 60& to \$	Grindstones. Family, Loring'sdis to
Stanter. Sad From a to scibs	Stove Polish P gross \$4.50 dis to Stove Polish P gross \$4.50 dis to Gem P gross \$4.50 dis to Gem P gross \$6.00 dis 7. Mirror" P gross \$6.00 dis 7. Ruby P gross \$3.70, last \$1.00 dis
Tailors do z side net constant dis 25 Mrs. Pott's Irons, Double Pointed. dis 25 Mrs. Pott's Irons, Double Pointed. dis 35 Mrs. Pott's Irons, Double Pointed.	"all TOT" # gross \$0.00, dis 5; Rubv. # gross \$3.75, Dissing Sun. # gross \$5.75, Dissing Sun. # gross \$5.75, Dissing Plumbage
Enterprise Star from	Equares.
Sand Paper. Eacder & Adamson's Flint, oo to 1½\$4.75 \(\pi\) ream 2, 2½. & 2,25 \(\pi\) ream Star	Steel
Emery . # ream \$5.50 @ 11.50 Earteles Flint, same list as B & A	Winterbottom's Try and Mitredis 20219 Tlacks, Brads. &c. List of April 2, 1880
New England, same list as b. & A. Flint	Tinned Swedes Tacks. dis 45 % Tinned American " dis 55 % Swedes Tacks, all kinds. dis 30 %
Common	Swedes Hungarian Nails dis 30 % American dis 30 % Gimp and Lace Tacks.
Gase's. **Nash Cord. Common. **P b 14 @ soc her Patent. ** b 10 ne her Silver Lase Russis Flax. **White Cotton. **P b 6c. dis 10 % Drab Cotton. **B 5cc. dis 10 % Raw Hide. Steel Ribbon. dis 10 %	Winterbottom's Try and littre dis notice of the control of the con
Steel Ribbon	Brush Tacks dis 25 % Brush Tacks dis 25 % Leathered Carpet Tacks dis 20 % American Cut Tacks dis 20 %
Steel Riddon. Sash Locks. Clark's, No. 1, \$10.00; No. 2, \$8.00 per gross dis 33/55 Fercuson's dis 33/55 Walker's not Hammond's Window Springs No. 1, \$10.00; \$\vec{g}\$ gross dis 2,5 Northup Window Springs No. 1, \$10.00; \$\vec{g}\$ gross \$10.00 to \$10.00 The Periect, Clark & Smith, Pisith Jap'd \$\vec{g}\$ gro \$10.00 to \$10.00 "Por Knob Jap'd. \$\vec{g}\$ gro \$1.00 to \$10.00 "Nickel-Plated \$\vec{g}\$ gro \$2.00 net "Universal" dis 20 \$\vec{g}\$	Cigar Box Nails
Northup Window springs, No. 1, slow, w always, with the Periect, Clark & Smith, Plain Jap'a @ gro 3:0.00 het Por Knob Jap'd. @ gro 2:0.00 het Nickel-Plated @ gro 2:0.00 net	Tup Borers. dis 15 kg to Enterprise Mfg. Co. dis 25 kg to
Mash to citation outs and and and	American
and over. **Miles.** \$\psi\$ dos \$\psi\$. dis \$0.5 **Miles.** \$\psi\$ dos, \$No. 15; \$No. 0, \$\psi\$. dis \$0.5 **Perry.** \$\psi\$ dos, \$No. 15; \$No. 0, \$\psi\$. dis \$0.5 **Perry.** \$\psi\$ dos, \$No. 15; \$No. 0, \$\psi\$. dis \$0.5 **Perry.** \$\psi\$ dos \$\psi\$. dis \$0.5 **Contemprise Mg. Co dis \$0.5 **Contemprise Mg. Co dis \$0.5 **All \$0.5 **Contemprise Mg. Co dis \$	Spring Tabes
Perry CutNo. 4 each \$30.00, dls 20 is Enterprise Mfg. Co dls 25 is Silver dls 25 is	Tobacco Cutters. Enterprise Miz. Co. (Champion)
Saws. Disston's Circular	Tobacce Cutters. Enterprise Mfz. Co. (Champion)
" Cross Cut. dis 40 % Hand, Panel, Rip, &c dis 20 % Boynton's Lightning, Cross Cuts, new list. dis 20 %	Tinners' Tools and Machines, Machines (P. C. & W.)
One-Man, all lengths	Transom Lifters. Wollensak's Patent
Naws Save Sircular	### Traps dis 40
Nos 101 102 103 104 105 Per dos 810 10.00 7.60 5.24 net	Mouse, Weod. Choker. • dos holes, 164 Round Wire. • dos 81,5 dis 10 Cage
Baw Formont. \$\psi\$ dos \$\frac{\psi}{\psi}\$ (dis 25 \ \psi\$ (Trawels.
Now Mote.	Disaton's Brick and Plastering
per dos. \$10.66	Clement & Maynard's. dis 30 Rose's Brick dis 11 Brades' Brick dis 15 Brades' Brick dis 30 dis
Common Lever	Garden
Bernis & Cali Co.'s New Patdis 40&c 5 Bernis & Cali Co.'s Lever & Spring nammerdis 30&c 5 Plate	Viscos Box List of July 1, '29 dis so
Boyston's Patent X Cut, per doz. \$12.00; Hand Sav. per doz. \$10.00.	Peter Wrights 1559 Wilkinson's 1346 Parallel, Parker's dis 10
Diston's	Wilson's dis 40 of the Wilson's dis 200 to the Warrill's dis 200 to the
Heales	Triers Datter and Cheese List. of July 1, 79 dis 50 "Crown" (a. H. Hildick) 40 to 10 B, 10 ne "Peter Wrikts. 15/6 "Wilkinson" 19/6 Parallel, Parker"s. dis 10 so Howard's dis 20 to Rorrill's dis 20 to Frentos. dis 60 to Frentos. dis 60 to Double Screw Leg. dis 14 to Prantlel, Prentis. dis 15/8 Saw Filers, Bonney's 4 dos 84,00 dis 20 to Rowrill's dis 20 to Prentis. dis 20 to Row Filers, Bonney's 4 dos 84,00 dis 20 to Rowlins dis 20 to Rowlins dis 20 to Rowlins dis 20 to Rowlins beard and and dis 20 to Rowlins beard dis 20 to Rowlins beard and and dis 20 to Rowlins beard and and dis 20 to Rowlins beard and and dis 20 to Rowlins beard and di
Fairpanks' Buffaio ficie Co. disrete 5 Howe's dis 20de 5 Chatillon's Grocers' dis 20de 5	Double Screw Leg. dis 14230 Prentiss dis 25 Bimpson's Adjustable. dis 25
Family Universal. dis 50 \$ " Favorite dis 50 \$	Saw Filers, Bonney's W dos \$44.00, dis 202100 Stearn's dis 202100 Hopkins' S dos 87 to dis 20
Scale Beams, Chatilion's list	Reading dis 40270 lower dis 20270 lower stand Vises dis 202 Richardson's Vise and Anvil. dis 202
Scrapers. Adjustable Box Scraper (S. R. & L. Co.), \$6. so. dis mate s Box, : Handle	Washer Cutters
Scrapers. Adjustable Box Scraper (S. B. & L. Co.), \$6. co.dis 20 & 10 & 10 & 10 & 10 & 10 & 10 & 10 &	Washers.—See Nuts and Washers.
# (Providence Tool Co	Well Wheels.—Revised listdis toking
Nouglass Mfg. Co	Bright and Annealed Nos. e @ 18, dis co @ ct S
Stanioy Ruie & Level Com, Varnished Hdlsdis 50&10 g Black Handlordis 40&10 S Sargent & Co.'s	Coppered
Douglass Mfg. Co	Tinned. Nos. 0 to 18
Nos. 4 and codis 30 %	Wire- Brass and Copper List of June 1s, 1860 dis 20 8 Bright and Annealed Nos. 10 28 26. dis 50 8 0 5 5 Coppered Nos. 76 28 26. dis 50 8 0 5 5 Coppered Nos. 76 28 26. dis 50 8 0 5 5 Galvanised, Nos. 5 to 6 Nos 28 18. dis 45 6 5 Galvanised, Nos. 5 to 6 Nos 28 18. dis 45 6 5 Galvanised Nos. 5 to 18 dis 40 8 5 5 Tinned. Nos. 5 to 18 dis 40 8 5 5 Tinned Broom Wire. Nos. 18 to 25 dis 478 6 5 5 Annealed Fence, Nos. 8 and 9 dis 478 6 5 5 Graps. Nos. 10 to 14 dis 50 6 5 5 Galvanised Telegraph, Nos. 7 to 9 28 20 6 Galvanised Telegraph, Nos. 7 to 9 28 20 7 Nos. 10 and 11 \$2 5 5 7 Fence Staples No. 18 5 7 75 6 75 6 Staples. Galvanised \$2 5 7 6 6 75 6 Staples. Galvanised \$2 5 7 6 6 75 6 Staples. Galvanised \$3 5 5 5 6 6 5 Japanned Barb Fence \$5 5 5 6 6 5 Japanned Barb Fence \$5 5 5 6 6 5 Japanned Barb Fence \$5 5 5 6 6 5 Japanned Barb Fence \$5 5 5 6 6 5 Japanned Barb Fence \$5 5 5 6 6 5 Staples. \$5 5 6 6 6 5 Staples. \$5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
Color	Fence Staples No. 13 P 1040 7400 Staples Galvanised P 54 6 5400 7400 W 54 6 5400 W
Round Head Brass. dis 5 st brass and Silver Capped. dis 60 st Japanned, list of Plain Screwe. dis 50 st c st Coach Patent Gimiet Point, List per 100. dis 50 st c Coach, Common. dis 50 st coach, Common.	Stude Steel wire
Coseh, Common	Galvanized Galvanized Steel Bluic Wire, Nos. 12 to 27. The \$2.25, net Turner & Seymour Mfg. Co., Picture Wire, dis 60:20 S Judd's Ficture Wire. dis 60:20 S Colorbe Line Wire. Galvanized S coin 15:40cn et al.
Bench, Iron	Wrenches.
Band dis zekto s Band Ball, Bargent's dis zekto s Band Ball, Bargent's dis coffee to s "Humason, Beckley & Cos dis cof am Screw Co, list of Jan. 1, % dis 26 Jack (Wilson's).	American Adjustable
Screw Window Balances.	Diagonal dis 205 Coes Genuine dis 405 Coes Genuine dis 505 Macchanics dis 505 to 5 Pattern, Malleable dis 505 to 5 Girard Srandara dis 505 to 5 Girard Agl 605 to 5 Bemis & Call's Patent Combination dis 205 Merrick's Pattern dis 205
R. B. Hugunin's\$36.00 per gross, dis 25% 10&5 % Bereil Baws	Bemis & Call's Patent Combination
Shears and Sciences. dis 26 % Shears and Sciences. dis 26 % American (Cast) Iron. dis 20 % dis 20 % to	Benis & Call's Patent Combination. dis 20 % " Merich's Pattern. dis 35 % " Briggs' Pattern. dis 35 % " Briggs' Pattern. dis 36 % " Using Polymer or Gas Pipe 10 so 30 to 30 % Van Wagoner & Williams' Basin per dos 20 to 30 km Pocket (Bright). So, dis 60 % of 5 he Favorite Pocket (sright). per dos 36 dis 60 % Webster's Pat. Combination. dis 35 %
American (Cast) from dis 70270 5 Clipper Cast Iron dis 70270 5 Clipper Cast Iron dis 70270 6 Clipper Cast Iron dis 70270 6 Frusing see Pruning Hooks and Shears Sarnard's Lamp Trimmers de 402 82,75 Thners' dis 50.2 Thners' dis 50.2 Stronger's List, Nov. 25, 1879 dis 60.2 Estimol's List,	Webster's Pat. Combination
Wymour's, List, Nov. 25, 1879	** No. 2
Mass. Cutlery Co. St. Trimmers	** No. 12
Henryes Hiding Door, M. W. & Co., list	Poerless, No. c, no Cogs
Moore's Anti-Friction	** No. 2, ** 64.00 % ** No. 3, ** 71.00 ** ** No. 4, ** \$9.00
Reading list	Webster's Pat. Combination dis 25 % Writingors Pat Oct 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Shevels kind Spades. dis 12/64 lues. New list Jan. 85. 1880. dis 12/64 lussey Winn & Co., Patent dis 15 4 lussey Winn & Co., Patent dis 15 4 lussey Winn & Co., Patent dis 15 4 lussey Winn & Assectation List. dis 5 4 lussey Winn & Co.	zoskior, No. 4, with Folding Bench

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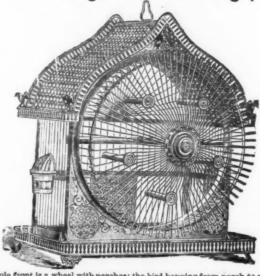
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PHILADELPHIA.

Factory, TACONY, PA.

Having, in conjunction with another firm of File Manufacturers, secured the exclusive right of an

IMPROVED PROCESS FOR SHARPENING FILES, we desire to call your attention to a few of its features.

All tools, excepting Files, are sharpened after having been hardened and tempered, and it has always been the desire of File Manufacturers to treat Files in the same manner, but until this new method was perfected it was impossible to insure that sharpness of the teeth so long desired.

New Mill Files sharpened by this process will not only do more work than an ordinary File, but will make finer and sharper cutting edges and file a harder saw. A trial of Files made under this improved process will fully demonstrate that they possess a degree of excellence never before attained. And this without extra cost to the

Rasps and Files for brass and other metals are specially benefitted. All packages containing goods so treated will be labeled "Sharpened," and be marked with the date of manufacture.

It will be readily seen that the sharpening of File Teeth, after hardening, is a valuable improvement in their manufacture, producing a File far superior to any made under the old system.

To meet the increasing demand for our make of Files, we have enlarged our works, and have now a daily capacity of 850 dozen. Of these we consume weekly, in our own workshops, 350 dozen. We are thereby enabled to detect any deterioration in the quality which may occur from time to time. We desire to thank the trade generally for the generous reception given to our Files since their advent into the market, and trust that, by strict attention to the quality of our goods and wants of our customers, to merit a continuation of their orders.

HENRY DISSTON & SONS.

are the most supple, most different popularity and superiority. There never was a Spring made that is so durable, so complete in its action, operating with a uniform pressure, holding the door tight when closed, and allowing it to open without increasing

the pressure at any point. When the door is opened about 130 degrees of a circle, it will press and hold it open. The Spring is easily unhooked and rehooked—in an instant—from the door and also from the Jamb, without removing a screw or pin.

This is a Convenience Possessed by no other Spring in the Market.

We are making this season three sizes, viz: No. 1 For Screen or Light Storm Doors. No. 2 For Medium Doors.

No. 3 For Heavy Doers.

They are for sale by most of the preminent jobbers of the United States and Canada. Correspondence solicited.

BARTLE'

FREEPORT, ILLINOIS.



WITH PATENT ADJUSTABLE ATTACHMENT. The only Saw that can be adjusted for either a One-Man or a Two-Man Saw. We make the following lengths, 3½, 4, 4½, 5 feet. Send for sample.

WHEELER, MADDEN & CLEMSON MFG. CO., Middletown, N. Y.



NEW MAKE OF MINE LAMP COLLAR BRASS HINGE, NO SOLDERING MELTOFE LEONARD BROS., Scranton, Pa.



HUNDLEY & HANKS, PROPRIETORS OF

CAROLINA HANDLE CO.



MANUFACTURERS OF Handles and Spokes, 79 Reade Street and 97 Chambers Street,
HARDWARE COMMISSION MERCHANTS.

John T. Lewis & Bros. No. 231 South Front St.,



MANUFACTURERS OF

Pure White Lead, Red Lead, Litharge, Orange Mineral, Linseed Oil, AND PAINTERS' COLORS.

Brooklyn White Lead Co.



TRADE MARK

White Lead, Red Lead & Litharge. No. 182 Front Street, NEW YORK,

JOHN JEWETT & SONS, Manufacturers of the well-known brand of WHITE LEAD.



LINSEED OIL. 182 Front Street, NEW YORK.



The Atlantic White Lead and Linseed Oil Co., MANUFACTURERS OF

White Lead (Atlantic), Red Lead, Litharge & Linseed Oil. ROBERT COLGATE & CO., 287 Pearl Street, New York.



DUNBAR BROS., Manufacturers of

Clock Springs and Small Springs of every description, from best Cast S BRISTOL, CONN.

The Morris Sash Lock Mfg. Co.,

Manufacturers of The Morris Sash Lock,

Pat. Combined Sash Lift & Lock, Pat. Self-Locking Shutter Bar, And specialties in Builders' Hardware. 214 and 216 ELM STREET, CINCINNATI, OHIO, U. S. A.

THOMAS MORTON,

CABLE, COPPER, IRON AND STEEL SASH CHAINS, pending window sashes. Also, Copper Cham-hains, with patent attachments, for same pur-Agents wanted in the principal cities in the States. Apply at 65 Etizabeth Street, New York.

PHILADELPHIA.	Serews. Flat Head Iran. Regas. Reund Head Brass. Fron Speens.
(Corrected Weekly by Lloyd, Supplee & Walton.) erms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.	Speens.
Nwils.	Speens. Plated German Silver. Britannis, Boardman's. Parker's. Tinned.
Eagle (American)	Springs.—Torrey. Philadalphias in \$5.00; 8 in., \$7.0
Reading No. 72 5.00 Reading No. 72 5.00 No. 74 5.00	Springs.—Torrey. Philadelphis. 5 in., \$4,00; \$ in., \$7,0 Chatfield No. 1, \$2,75; 2, \$2,25; 3, \$4,00 Gem Coil No. 1, Large Jap'd. "No. 2, Medium Jap'd. "No. 4, Smail Jap'd.
Parers Seystone Centennial 1875 Seystone Centennial 1875 Seystone Centennial 1877 Seos	
Lots of 10 to 25 dozen special prices. Xes. Hunt's Kentucky and Yankeeper dos \$11.00	Stove Polish.—Gem. # gr. Dixon. Onyx.
Mann's Red Warrior. " 11.00 Richland Chief. " 10.00 Beveled Axes. add 50c " net	Tacks, Shee Nalls—4-8, oldc.; 3½-8, rec * b Double Pointed Tacks.
Double Bit Axesnet 22.co ngers and Auger Bits.—New List January 1. Bates' Nut Augersdis 40 5	Traps. Genuine Oneida—Newhouse Im. Oneida—Newhouse list, first qua
Nes. Hunt's Kentucky and Yankee per dos \$11.00 Mann's Red Warrior. 11.00 Red Holled (10.00) 10.00 Beveled Axes net 10.00	Vines.—Solid Box. Trenton new list Wrenches.—Agricultural
Griswold Auger Bits. dis 40 % Cook's dis 40% to % Storm dis 40% to % dis 70% to % d	Wrenches,—Agricultural. Coes' Genuine. Mechanics' Mall. Bar Philada. Tool Co., Duplex.
Bonney's Fat. Hol. Augers, list \$45 \(\) dozdis 20&10 \(\) stearns' Pat. Hol. Augers, list \$45 \(\) dozdis 20&10 \(\) alances. Light and Common	
	Bright or Ann'd, No. o to 18
elise. Bevin Bros. Mfg. Co. Light Hand Bellsdis fo&to \$ Bevin Bros. Mfg. Co. Light Hand Bellsdow list dis so&to \$ Connell's Door Bellsdow list dis so&to \$ Gonnell's Door Bellsdis 5,6 \$ \$ \$ Western & Kentucky Cow, new listdis 5,6 \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	Gaivanized No. 7 to 18Market L Wringers. Peerless No. 214
Ohamhers' No. 1. for % bolteach, \$7.50	Wringers. Peerless No. 216. Universal, No. 216. Novelty, No. 16.
ering Machines. Upright, without Augers. List 5 5 dis 40 4 Angular, without Augers. 6.75 dis 40 4 Angular, without Augers. 6.75 dis 40 4 Angular, without Augers. 1.75 dis 40 4 Angular, without Augers. 1.75 dis 40 4 Angular, without Angular dis 40 40 Angular, without Angular dis 40 Ang	and the same of th
oits. — Eastern Carriage Bolts dis 74210 % Philadelphia	PITTSBURG
	Merchant Iren. TERMS Note or acceptance at 50 da rate of exchange on New York, or a d cent. for cash, if remitted within re-di
american Ball dis 55 % utts.—Cast Fast Joint, Narrow. dis 45 \$10 %	cent. for cash, if remitted within re di invoice.
American Ball	1½ to 4 by % to r inch
Hayer's Loose Pin dis 5&ro \$ Hayer's Loose Pin dis 5&co \$ Wronght Loose Pin dis 5&co \$	1 and 1½ by % to % " 56. % and % by % to % ineh
Table Hinges and Back Flapsdis socie 5 Narrow, Fast	Rounds and Squares. 1 to 134
lind Butts. Parkerdis 70 % Cank	T to 114 2.50 \$4 to 916. 2 to 294 2.70 \$4 to 716. 2 to 294 2.70 \$4 to 716. 234 to 344 3.00 \$4. 244 to 345 3.00 \$4. 245 to 54 4.00 \$4. 245 to 54 2.50 \$456.
heparddis so, restro s all & Forterdis soaro s Buffer'sdis soaro s	% to 14
anins.—German Halter and Coll. new list Oct. 22, 1870	10 1/6
In d Battes	% to 14 inch
inseria, — socket Framing	% to 114 by 5-15 to 34 inch
naters.—Hed (new list July 1, 1880,)dis 35&10 %	Vagon Fox Fon. Value 13 and 14. Value 14 and 12. Value 14 and 14. Value 14 and 14. Value 14 and 14. Value 15 and 14. Value 16 and 15.
Suckee's Stoo to figoid saters.—Bed (new list July 1. 1880,) dis 5,820 5 dis 5,820	13 and 14
anders, Frary & Clark, J. Russell & Co., Lamson & Goodnow Mig. Co. and Meriden Cutlery Co., Manu- facturers' prices net.	Heavy Bands, 314 to 6 by 14 and 5-15 inch
rawing Mulves. Iart Mfg. Oo.'s	3 4 to 6 by 14 and 6 16 inch. 136 to 34 by 14 and 5 16 1 to 136 by 14 and 5 16 1 to 136 by 14 and 5 16 34 to 14 by 14 and 5 16 35 and 16 by 14 and 5 16
Pans. inned	Light Bands. 134 to 6 by 14 to 3-16. 134 to 6 by Nos. 11 and 12.
y Faiss finaned	to 1% by % to 3-16
Nicholson dis 40 %	** and ½ by ¼ and ½-16 ** Light Bands. 1½ to 6 by ¼ to 3-16 1½ to 6 by ¼ to 3-16 1 to 1½ by ½ to 3-16. 1 to 1½ by ½ to 3-16. 1 to 1½ by Nos. 11 and 12. ½ and 13-16 by ½ to 3-16. ½ and 13-16 by Nos. 11 and 13. ¾ and 11-16 by ½ to 3-16. ¼ and 11-16 by Nos. 11 and 12. ¼ and 9-16 by Nos. 11 and 12. ¼ and 9-16 by ½ to 3-16. ¼ and 9-16 by Nos. 11 and 12. ¼ inch by ½ and 3-16. ½ floch by ½ and 3-16. ½ floch by Nos. 11 and 12.
	% and 9-16 by Nos. 11and 12
tating Machines. Eagle-3 4 n.rolleach, \$2.15 dis 10 \$	134 to 4, Nos. 13, 14 and 14.
5. M. Boyaton, new list	134 to 2, No. 29.
eneva Fluter	15-16, 1, and 154, Nos. 13, 14 and 15 15-16, 1, and 154, Nos. 16, 17 and 18
erkes & Plumb's, new listdis 30 % andles	14-16, 1, and 134, Nos. 19 and 20 14-16, 1, and 134, No. 21
untdis 1525 \$	% Nos. 13, 14 and 15
nges. dis 6-kiro frapand T	%, No. 22. 12-16, Nos. 13, 14 and 15. 13-16, Nos. 16, 17 and 18
" Pol'ed & P't'd and Blued and Pointed. 31 28 2 25 24 23 20 20 20 20 20 20 20 20 20 20 20 20 20	13-16, Nos. 19 and 20
#inton	M. Nos. 15, 14 and 15 Nos. 16, 17 and 18 Nos. 19 and 20
Discount on Ausabie and Clinton, 20 %; Globe, 10% ocks and Knobe. Stanford	\$4 and 9-16 by Nos. 11 and 12 \$4 inch by \$6 and 3-16 \$5 inch by \$6 and 3-16 \$5 inch by \$6 and 3-16 \$5 inch by Nos. 11 and 12 \$14 to 4. Mos. 18, 14 and 15. \$14 to 2. Mos. 19, 14 and 15. \$14 to 2. Mo. 19, 14 and 15. \$14 to 2. Mo. 20, 15. \$14 to 2. Mo. 21, 15. \$15 to 2. Mo. 20, 15. \$15 to 2. Mo. 20, 15. \$15 to 3. Mo. 20, 20, 20, 20, 20, 20, 20, 20, 20, 20,
Discount on Ausable and Clinton, 20.5; Globe, 105 ccks and Knebs. dis 4,62.5 dis 5,62.5 dis 6,62.5	11-16, Nos. 19, 17 and 18
No \$7 58 59 60 61 62 63 dis 60 % \$ 0.00 36.00 \$ 0.00	54, Nos. 13, 14 and 15
Nail City	No. 21. No. 22. No. 23.
add City. Pdoz. \$9.00 net quare Candle and Oll. Pdoz. butlar No. 0, \$8.55; No. 1, \$10.15 P doz net Globes, 36 cents extra per doz. net.	9-16, Nos. 13, 14 and 15, 9-16, Nos. 16, 17 and 18. 9-16, Nos. 19 and 20.
wn Mawers,—Pennsylvania	9 16. No. 23 9 16. No. 23 9 16, No. 23
RECOCKS.	36 then, Nos. 13, 14 and 15
attocks. ong and Short Cutterper doz ennsylvania Patteraper doz olasses Gates. kntarprise Mfx. Co 's Measuring Faucetsdia 25 %	No. 21 No. 23 No. 23 The prices under Hoop Iron do not Ties.
Stebbins' Gates	Ties. 1-roc per lb. extra will be charged lighter than the lightest indicated.
rass Liquor Cocks, new list Jan. 1 1884	1-toc per lb. extra will be charged lighter than the lightest indirated. 1-toc per lb. extra will be charged for to specified lengths. Barrel Hoops.
Noors	to specified lengths. Barrel Hoops. 1/4 to 2 in., cut to lengt o to 11 lbs, per set of 6 hoops. 8 fbs. and less than 9 lbs. per set of 6 l Less than lbs. per set of 6 hoops.
American dis 25 % Enterprise Stuffers days	Extras for Cutting to Length all Pr
Semasylvania Pattera per dos de la sessa d	No. 9 and heavier
New York Tool Co	No. c and hasvier. Piow Slabs. Wings. Sheet Ires. Common. No. to to 14
Alburn A	No. 16 to 143.40 No. 15 to 173.8c No. 18 to 21410
icks.—New list. s mps.—Bickford	No. 22 to 24
Stanley Ivory dis 60&10 \$ Stanley Ivory dis 60&10 \$ teef yards.—Hart's Pattern dis 30&10 \$ \$ dos\$14.50 17.7% 21.00 26.50 \$	No. 28
Lbs 40 fee 140 200 3100 35.40 American Pattern	Wood's Putent Planished ust quality (A)120 2d quality Galvanised Iron-Junio
guarces. Stanley	quality, 37% %. Coal Screen Iron. 4% by % by 4-162.00 1 by % by
Clipper No. 10. Bronsed Blade, Boxed and Sharpened	Coal Screen From. 434 by % by \$-16
Sharpened	ild by i inch, for Plow Handles
n ws Disston's Hand. Panel and Rip. dis 25 Disston's Circular. dis 40 5 Cross-Out No. 2. Plain Tooth. dis 40 5 "Patent Tooth. dis 40 5 Boynton's Lightning Cross Out, new list. dis 40 5 One Man, all lengths, dis 20 5 Billet Webs, 20 inch. dis 40 5 Elightning Buck Saws, cross bar. dis 20 5 Days and Shaddes and Alphale and Rip. dis 25	134 by 1 lnch, for Flow Handles
Boynton's Lightning Cross Cut, new listdis 20 % One Man, all lengths, dis 20 % Billet Webs, 20 inch, dis 25 %	13 "2.90 20 lbs. to 16 "2.90 40 " Spines Joints for 12 16 and 30 lbs. to
Lightning Buck Saws, cross bardis 25 % "Hand, Panel and Ripdis 25 % Tovels and Spades. Appelend	and 30-lb. Hall, soc each : 40 lb., 60c ea
Oliver Ames & Sons. new list	Flat Rails.—Punched and Cou
Irs. Potts' Patent dis 35 % one.—Afkansas Oi: Stone	Flat Rails.—Punched and Cou
10 × 10 × 10 × 10 × 10 × 10 × 10 × 10 ×	Juniata Nail Rods
No. 2	Guard from, Saratas and Masacas
No.	Norway Ran Octa Norway Rand Narway Guard Iron, %x74x16 and %x74x16 and %x74x16. Drag Bars Bropper Bars Cylinder and Landside Iron Plow Beam Iron.

	T	I
I	Serows. dis 40 5	rod
	Serews. dis 40 5 Final Read Iran dis 40 5 Final Read Brass dis 50 5 Form dis 50 5	34 to 5-16
	Species	7-32
ĺ	Springs_Torrey	Oll N less
	" No. 2, Medium Jap'd 2.00 " No. 2, Smail Jap'd 2.00 Stocks and Dies	Ord
	Stove Pallsh.	5-16 5-16 7-32 3-16
	Double Fointed Tacks	Siliat
	Vises.—Solid Box. Trenton new list	2 (E
	Wrenches, Agricultural dis 60% to \$ Coes' Genuine dis 50 % " Mechanics' dis 50% to 5 " Mall. Bar dis 50% to 5 Wire, dis 70% to 5 Wire,	To
	Wire. Bright or Ann'd, No. c to 18. dls 5, to 574 8 No. 19 to 26. dls 50 to 50 4 8 No. 27 to 30. dls 50 to 50 4 8 Coppered. c to 18. dls 5, to 63 8 Coppered. c to 18. dls 4, to 63 8 Tinned Broom Wire. dls 4,74 to 58 6 Galvanised No. 7 to 18. Market List, dls 3, to 40 8 Wringers.	Au
	Poerless No. old	Fre
	Universal, No. 216 Novelty, No. 10.	Sk. Ta Pil Co
	PITTSBURGH.	Sp Tr
	Merchant Iren. TERMS.—Note or acceptance at 5c days, with current rate of exchange on New York, or a discount of 2 per cent for cash, if remitted within 1e days from date of invoices.	Pin
		Bo t Bo
	15 to 4 by 5 to 1 inch	Ci
	Rounds and Squares, 1 to 174 .	Sq
	1 to 176	Ta He
-	34 to 11/4	Sp
1	16 to 16 inch	IX IX IX Se So
-	% to 1% by 5:15 to 1% inch	Fo
	\$\frac{1}{4} \tau \tau \tau \tau \tau \tau \tau \tau	He Co Be Cr
	Heavy Bands. 314 to 6 by 14 and 4-16 leah. s.pc 114 to 314 by 14 and 5-15 " 2.pc 1 to 174 by 14 and 5-16 " 2.pc 4 to 174 by 14 and 5-16 " 2.bc 4 to 174 by 14 and 5-16 " 2.bc	Sp
	% and % by % and 5-16	A
	Light to 6 by 16 3-16 3-16 3-16 3-16 15 16 16 5 16 16 3-16	Cti Sc Gr
20 147	\$\frac{2}{6} and 19-16 by Nos. 11 and 12	Re
8	Hoon Inou	1
	14 to 2, No. 19. 17 and 18. 340 14 to 2, No. 19. 350 14 to 2, No. 20. 350	Fi
6	124 to 2, No. 22 3.70 134 to 2, No. 22 3.80 15-10, 1, and 15-4, Nos. 13, 14 and 15. 3.60 15-10, 1, and 15-4, Nos. 16, 17 and 18. 3.60 15-16, 1, and 15-4, Nos. 19 and 20. 3.70 15-16, 1, and 15-4, No. 21 15-16, 1, and 15-6, No. 22 3.80 2, Nos. 12, 14 and 15-5. 3.80	Si Si
	124. Nos. 16. 17 and 18	Sp.
1000	3. No. 21	E
307	13-10, Nos. 19 and 20	6 8 25 14
2000	13:16, No. 21 13:16, No. 23 4. Nos. 13, 14 and 15. 4. Nos. 15, 17 and 18 4. Nos. 16, 17 and 18 4. Nos. 19 and 20 4. Nos. 19 and 20 4. Nos. 21 11:16, Nos. 21 11:16, Nos. 15, 17 and 18 4. No. 21 11:16, Nos. 15, 17 and 18 4. No. 21 11:16, Nos. 15, 17 and 28 4. 10 11:16, Nos. 21	54
-	11-16, Nos. 16, 17 and 18. 4-20. 11-16, Nos. 19 and 20. 4-50. 11-16, No. 21. 4-50.	Di
	Nos. 19 and 20	
	56, No. 22. 450 58, No. 23. 4866 59 No. 23. 14 and 15. 400 50 -16, Nos. 13. 14 and 15. 400 50 -16, Nos. 19 and 20. 470 50 -16, Nos. 19 and 20. 480	tribe be
t	7-16, No. 22 4-25 7-16, No. 22 4-99 7-16, No. 23 5-90 14, 10, No. 23 5-14 14, 10, No. 13, 14 and 15 5-18 14, 10, No. 10, 17 and 18 4-60 14, 10, No. 10, 10, 10, 10, 10, 10, 10, 10, 10, 10,	1-
-	** No. 21	6
NO 100 100 10	The prices under Hoop from do not apply to Cotton Ties. 1-to: per lb. extra will be charged for each gauge lighter than the lightest indicated. 1-to: per lb. extra will be charged for outting floops	1.5
-	to apocalised roughten.	30 34 38
TO US OF THE PER	Durret Moops. 3 to 2 in, out to length. 3 to 1 in, out to length. 3 to 1 in, out to length. 3 to 2 in, out to length. 5 to 5 in, out to 1 in, o	6 11 18
-	All Iron, including Tiro	26 26
2000	Sheet Iren. 3.40 Common. Charcoal. Juniata.	34
	No. 18 to 17. 3.8c 5.3c 6.8c No. 18 to 21. 4.10 5.6c 7.10 No. 22 to 34. 4.30 5.8c 7.3c	li.
B 01 01 01 01	No. 26	I
60	1st quality (A)120 2d quality (B)10460	
2000	quality, 37% %.	1
t	4% by % by 5-10 2.00 I by % by 5-16.	
42224	256 3, 356 and 4 inch. 3.30. 126, 136, 2 and 254 inch. 3.25. 134 inch. 3.25. 134 inch. 3.25. 144 by 1 inch, for Piow Handles 3.26. 156 by 54 1 3.26. 156 by 54 1 3.26. 18 lbs. to the yard. 2.26 20 lbs. to the yard. 2.26	
MARKARA	8 lbs. to the yard2.90 20 lbs. to the yard2.90 12 15 2.90 28 2.90 28 2.90	
KKKK K	3/6 by % and % Spikes for 20 and 28 b. Rail	P
馬馬の馬	114 to 2 by 16 to 36 inoh	1
60000	Juniata Nail Rods	3

Г	HE IRON AGE	
1	Nails.	
MMMM	zed to bed	
8	% to 2 inches, inclusive	
6 %	### Square, Flat, Octogen and Round. ### to a Inches, inclusive	3
N N N	3-16 and 51/4 to 6 "	CHE
N M M	Oil Well Steel Forgings. 27 0	4
8	Test inch. 3 19 0 23 c 23 c 23 c 23 c 25 inch. 3 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	OL RE
	Machinery Steel	6
% %	Ordinary Sizes, % to 2 inch Crucible. Dessemer & Open Hearth.	20.00
t	Ordinary Sizes, % to 2 inch Round 7560 60 5-16 and 2% to 3 inches 850 70 4 and 3% to 6 940 60 7-32 inch 10-60 90 3-16 12-560 112-560 110	4 4
t xx	7-32 inch 10-40 90	0
8	Square, Flat and Octagon, &c extra throughout the	2
W W	Cut to specified lengths, 1/2c extra.	41.00
*	2 inches and under	4
8	200 to a sandaron	
200	Sheet Steel.—Crucible. Bessemer &	
	Best. ad Qual. 2d Qual. Open Hearth. 130 re. extra for each additional gauge. Cut to multiples or specified lengths. 4c. extra.	
*	Cut to multiples or specified lengths, 1/c. extra.	
MANAMA	Miscellaneous Cust Steel. Auger and Auger Bit	
26.26	Auger and Auger Bit	1
	Pick, plain	
	Skate Steel	
-	" Side Bars	
	Roller	
	Roller Typical subject to Machinery classification 8 to Trap Spring Steel. 94c Forsed Crank Pins and Lathe Spindles 06c Piston Rods, plain 06c	١
	Forged trank Fins and Lathe Spindles. 10-cc Piston Rods, plain 10-cc Fiston Rods, plain 10-cc Fiston Rods, plain 10-cc Fiston Rods to Slide Bars, plain 10-cc Fiston Rods to Shapes 10-cc Fiston Rods	١
at er	forged to shapes	ı
of	Roller Fire Roy and Flue Sheets and I	ı
SC SC	thick	l
oc oc		١
70 98	ately Smoke Stack, to shape Locomotive Tank Steel	l
70	File Cast Steal	١
90	Square, Round, Half Round and Flat Bastard, & Inch and over.	l
30	Square, Round, Hair Round and Flat Bastard, and over	ı
50		۱
3C 7C	Spiral and Taper, cut to lengths	ı
	IXM and over	١
BC FC	1 and 13-10x16 and 5-82, %(x3-16 and 5-32	ı
5C	1x34 and over 5c 1x3-16, %xx3-16 and 4d 5c 1x3-16, %xx3-16 and 4d 5c 1x3-16 and 5c 1x3	I
	Agricultural Implement Cast Steel. Fork and Rake, Crucible.	١
70 50	Hoe, Crucible Corn Stalk Cutter bevaled	I
BC 4C	Fork and Rake, Crucible. Horee Rake Steel, cut to lengths, Crucible. 9 c Hoe. Crucible. Corn Stalk Cutter, bevaled. Corn Stalk Cutter, bevaled. 9 c Crucible Flow Steel in slabs. Besseight Grant Bars. Crucible Flow Steel in slabs.	١
ic	Bessemer and Open Hearth.	۱
70	spiral and taper, cut to lengths.	ı
70,70,00	Toe Calk	١
90	Axie Billets	ı
ec IC	Spring spiral and taper, cut to lengths 6-6c Tire, spiral and taper, cut to lengths 6-6c Toe Calk 5-6c Thrasher Steer Blanks, cut and punched 5-6c Thrasher Steer Blanks, cut and punched 5-6c	1
IC IC	Grain Drill Bars	ı
30 40 50	Holling Coulter Hanks, cut and punched. 10%C Thrasher Steel. 5%C Rolled Hammer Billets 6%C Where Bessemer or Open-hearth Steel	1
70 80		
00	in place of Crucible, the difference in price shall not be greater than 10, per lb. except where small not	ı
30 40	Rolled Hammer Billets Where Bessemer or Open-hearth Steel can be used in place of Grucible, the difference in price shall not be greater than 10. per lb., except where especially Terms.—Four months; 3 per cent. discount for cash, if remitted within 30 days.	1
30	Rolls and Castings.	1
30 40 50 60	Relis and Castings. Furance, Flora and Straightening Plates. Housings and Castings not otherwise specified of Guide Plates. Spindles and coupling boxes. Sand Rolis and Platons, large size. Signification of the Castings of	1
70 8c 50 6c	Spindles and coupling boxes.	١
60 60	Sand Rolls and Pinions, large size	1
7C 2C	Rolling Mill Castings under to lbs	
70 80	Pulleys up to se inches small	١
90	Engine Castings, light	1
10	Chilled Rolls.	1
10	6 to 7 in. diarm., 7 to 20 in. long	1
30 00	5 to 15 in. (1 & to 40 in. long	1
10	White and Red Lead.	1
30 40 20	Strictly Pure White Lead in Cil. in kegs, in loss of co b and over, so; less than so b, sed in st and so b Tin Pails, lec. B b over keg price; 12/5 b Tin Pails, 1cc, to 5 b, nos b Cases, 12c.	1
30 40	Palls, 10 # B over keg price; assorted, 1 to 5 B, 100 B Cases, 120.	1
50 50	Dry White Leadless than see lbs 8kg: over see lbs.8kg	
40	Litharge (Potter's Lead)	1
90 00 70 80	Terms: Note at sixty days, or if paid within is days	1
8c 9c 6c	Pails to \$\Pi\$ be over keg price; assoried, i to \$\Pi\$, to \$\Pi\$.	1
50 70 80	Window Glass. Per Box of 4s Feet.—Discount doubt. Son single strength.	- 1
98		1
10 80	Single Strength.	-
no.	Olem, AAIA BIA	- 8

Single Stren	gth.			
Size.	A.A.	À.	B.	C.
x 8 to 10 x 15	88.25	87.50	\$7.00	86.50
	9.25	8.50	8,00	7.21
	10.75	9-75	8.79	7-75
x 36 to 24 x 30	12.25	10.75	9.60	8,00
X 20 to 24 X 30	13.00	11.50	9.75	0.0
	14.90	13.25	10.75	9.5
	15,00	14.00	11.25	10.4
	10.00	14.50	13.00	-
X 50 to 34 X 66.	17.35	19,40	13.50	
A 20 10 34 X 00	18.55	17.25	15.00	
X 45 to 34 X 50	20.75	18.75	17.25	
Double Strength.				
X 8 to 10 X 15	12.75	11.75	10.75	16.0
X 14 to 16 X 24.	14.9	13.25	12.50	13.2
X 22 to 20 X 30	17.25	14.74	14.00	
x 36 to 24 x 30	19.75	17.25	\$4.50	
X 26 to 26 x 44	31,00		15-75	
X 36 to 26 X 44	28.25	31.35	37.35	
	24.00		28.06	
X 53 to 30 X 54	25.75	25.25	19.35	
X 55 to 34 X 55	37.75	25.00	31.75	
x 58 to 34 x 60.	39.35	27.75	34.00	
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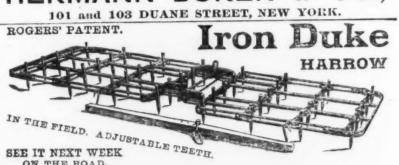
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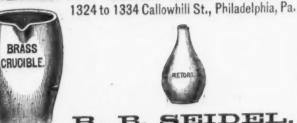
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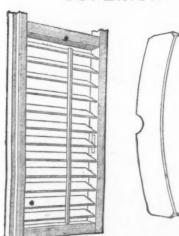
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Such construction as will equalize all strain resulting from expansion and contraction, thus avoiding warping, and thereby insuring long service.
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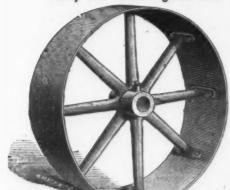
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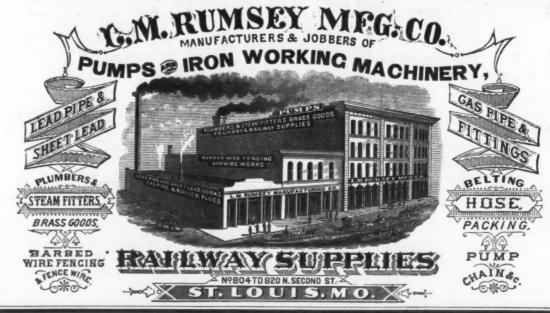
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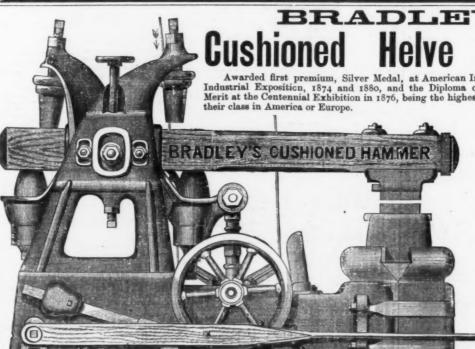
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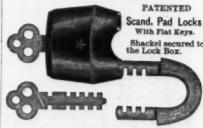
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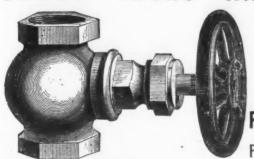


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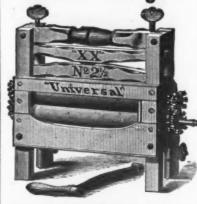
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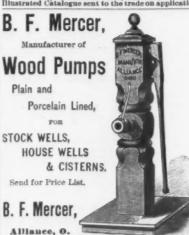


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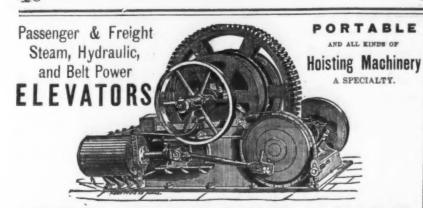
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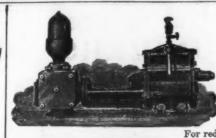
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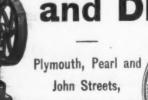
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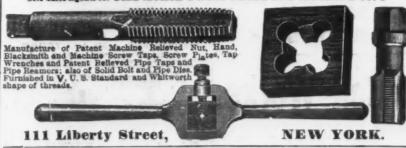
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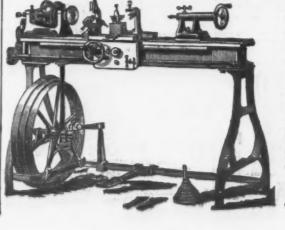
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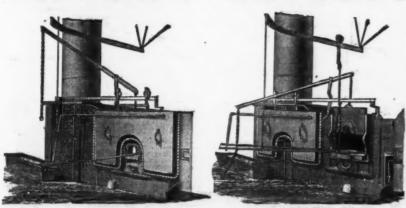
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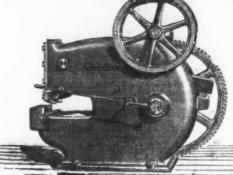


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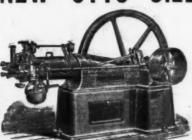
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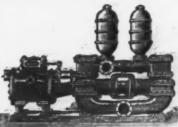
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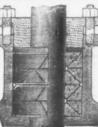
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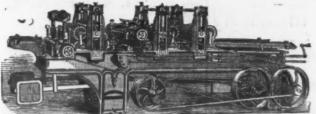
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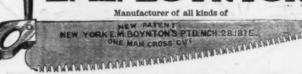
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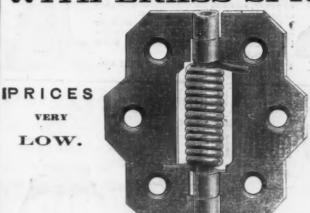
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